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LECTURES.

LECTURES ON INTRACRANIAL SURGERY.

VII—BRAIN TUMOR AND ITS SURGICAL TREATMENT.

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Resuming description of cases of tumor of the brain and its envelopes, upon which I have operated, I next wish to relate the history of an

Osteoma—Operation—Recovery.—W. L. W., of Fairport, N. Y., aged 28 years, I first saw in June, 1889. His family history was good and his health excellent until 1884, when he had syphilis. In June, 1887, he fell and injured the right side of his head, from which he was unconscious for several hours. Soon afterward he began to have headache with a tender spot just in front of the right parietal eminence; then there was a change in his disposition; he became irascible, shiftless and vulgar, began drinking heavily and taking morphin for the head pain. Some time during 1888 he had a "stroke of paralysis" after a hard debauch, the left hand and arm remaining paralyzed for some weeks; motion gradually returned under large doses of iodid of potassium. During the latter part of May, 1889, he had intense headache over the motor region of the right side of the head, accompanied by vomiting and much difficulty in walking. He again drank heavily and on June 1 had a second paralytic attack. He was found unconscious; completely paralyzed upon the left side, and with aphasia, agraphia and word blindness, as was noted June 2 after he regained consciousness. His entire vocabulary consisted of "God damn fool" and "morph," the latter being a request for morphin uttered in a piteous tone. For several days convulsive movements of the paralyzed side were noticed, leading to the conclusion that the lesion was superficial. He was placed in my care June 5 and remained under observation for a number of weeks, the aphasia continuing unimproved, only a slight degree of motion returning in the leg and none in the arm, in spite of the most vigorous antisyphilitic treatment and the use of electricity. The frequency and severity of the convulsions of the affected side became less and finally this symptom disappeared. The "morphin habit" was cured. His general condition improved to a remarkable degree and he became fat on immense doses of iodid of potassium. On August 1 he could read the newspapers and novels for hours, was feeling well and decided to return home; the paralysis and aphasia continued the same, so I accompanied him to his home in New York. He came to me again Feb. 5, 1891, anxious to be trephined, as he had heard me say that was the only chance of relief. The paralysis of left arm was still complete, but a little motion was found in the leg and he could walk with the aid of a crutch. Some command of language had returned, but speech was child-like in character. General health fair.

At 10 A.M., Feb. 22, 1891, with the assistance of Drs. W. S. Allen and John Punton, I opened the skull with chisel and mallet and attempted to enlarge the opening with bone forceps, but the tissue was so hard at the point of attack that a very strong pair broke and it was necessary to complete the operation by carefully chiseling away the bone, bit by bit. A tumor of the bone was found, extending from near the middle line at a point just over the Rolandic fissure downward and forward over the motor area for a distance of nearly three inches. A cross-section presented the appearance of the accompanying illustration.

The external table was not at all raised or thickened but the vitreous plate was very thick and excessively hard. After removing the bone, I opened the dura and inspected the brain. The cortical substance of the arm center and the posterior lower part of the frontal convolutions appeared blanched—"atrophied," as Dr. Punton expressed it—and he further expressed the opinion that the speech center was, in this patient, in the right hemisphere. I then explored the subcortical tissue and white substance to the internal capsule at two points, but found no sign of old hemorrhage. I closed the two wounds in the dura with fine catgut, checked oozing with hot water, inserted a drainage tube and closed the scalp at the end of one hour and forty minutes.

At 6 P.M., he was in fine shape. He spoke much better than before the operation, said he could move his leg with greater ease and expressed himself as very hopeful of permanent benefit.

My entry for February 24 says: "Eats and sleeps well. No fever. Says he feels much better than before the operation. He can completely flex leg and thigh of left side, which was impossible before. Got out of bed and walked around ward last evening! And to-day went to water closet for bowels to move. Passes urine with far less straining than any time since paralysis began."

The drainage tube was removed February 26 and permanent dressings applied. The wound was in good condition and at the next inspection (March 2) was found healed by primary union. March 14 he was walking without a cane, the paralysis of the leg having almost entirely disappeared and the arm much better—some movement in the fingers being perceptible. He then said: "My bad headache is gone with all my other bad feelings; things look clearer and more natural than in years." There was little more improvement during his stay in the hospital. He was discharged April 27 in perfect health—paralysis much better than previously and mental condition decidedly better.

Section of osteoma; actual thickness.

He returned to the hospital on June 1, in good condition, but under the influence of whisky and with but a few dollars in money—hence very much discouraged. As he was not ill he was discharged from the hospital June 2. He committed suicide at Leavenworth, Kan., June 3. The post-mortem examination was made by Dr. M. S. Thomas, who recorded that: Rigor mortis was complete and firm on the right side, but not so complete on the left. Left arm one inch less in diameter than right, and left thigh one and one-half inches less than right. A somewhat circular opening was found on the right side of the head covered by scalp with large C-shaped cicatrix. Calvarium removed having in it a roundish opening (loss of bone) 2 x 3½ inches. There was no evidence of suppuration; there was an adhesion of the dura mater at the edge of the bone and a thin ligamentous filling-in of the opening already begun. *The brain seemed to be perfectly healthy everywhere.* The conclusion, made before the jury, was that a recent surgical operation had been performed on the head and that he came to his death from morphin taken hypodermically, etc.

It is to be regretted that this patient killed himself so soon after recovery from the operation, as it would have been instructive to note the amount of improvement that might follow removal of such a long-continued pressure. Is it possible that complete regeneration would have eventually been noted? I think it hardly probable. But in spite of this, I was well satisfied, indeed, with the decided change wrought by the operation. If I had had the courage of my convictions, and operated when he first came under my

care, I believe a cure might have been effected. Three other points are worthy of notice:

1. The fact that the patient stood the prolonged operation so well. Had I not spent much time in trying to cut the bone with forceps, and had I omitted the useless exploration of the brain, I might have completed my work inside of an hour; yet in spite of the severity of the operation, the long-continued anesthesia, and the use of the mallet and chisel, there was practically no "shock." I account for this chiefly by reason of complete hemostasis—there was not more than four to six ounces of blood lost altogether.

2. The rapidity of convalescence. As noted in the history, this man insisted upon getting up inside of twenty-four hours, and never could be kept in bed except at night after the second day. Yet no harm resulted, so far as we could determine.

3. Aphasia with right-sided lesion. Since the physician who made the autopsy is positive in his assertion that there was no lesion discoverable in the brain, we must conclude that the paralysis was due to the pressure of the tumor, and the aphasia also to the same cause; if this assumption be correct, the speech-center must have been located upon the right side. He was, he asserted, ambidextrous, but wrote with the right (paralyzed) hand. He learned to write his name with his left, after convalescence from the last comatose condition.

Another case, of especial interest on account of the favorable result, as well as the localizing symptoms, was the following:

Subcortical Tumor—Operation—Recovery.—A. C., stockman from Montana, consulted me Dec. 18, 1890. He was a Swede, 41 years of age, married fifteen years. His family history was good, and health excellent until 1876, when, in Southern Kansas, he had what the doctor called "malarial fever," from which he was in bed many weeks, and did not completely recover for more than a year; never had been as well since as he was before this attack. He suffered from heat stroke in 1878, after long exposure to the hot sun of the prairie; he was very sick for several hours, and convalesced slowly, being in bed fully two weeks. Afterward he was subject to "sick headache," *i. e.*, attacks of pain upon the top and left side of his head, accompanied by great prostration, vertigo, and vomiting of mucus; these were promptly relieved by a brisk cathartic. The last attack occurred in March, 1889, but a dull pain in the left side of the head began soon after, and had been pretty constant since. In September or October he began to have trouble with his right arm and side of face—slight spasmodic contraction, with muscular weakness. The paroxysms had increased in frequency and severity, until the spasmodic contraction of the muscles was so great as to be exceedingly painful; and he was positive that the uniform course was this: spasmodic contraction of muscles of the right side of the face and head, especially marked in the eyelid, quickly involving the hand, then the arm and forearm, and neck, causing violent spasm of the flexor muscles of the arm, forearm and fingers; the convulsion always begins with pain and severe contraction of the muscles about the outer side of the right eye and the temporal region; during the attack the head and eyes turn violently to the right, and he gasps for breath; he becomes totally aphasic for a period of ten to fifteen minutes after each spell, but there is never any loss of consciousness. He was very positive as to the constancy of this course. The attacks appeared two or three times a week, but though increasing in number, more than two weeks elapsed between the last two before the examination. He felt very much exhausted for some hours after more recent convulsions, and a numbness persisted in the hand and arm for several hours. Examination showed no trouble with the urine—specific gravity 1026—or with the organs of the chest and abdomen. The retinæ were pale—no evidence of choked disc.

While there was no history and no signs of syphilis, I put him upon appropriate treatment for gummy tumor for some weeks, and kept him under careful observation. This was the only alternative, as he would not consent to operation. He had only two attacks in January, 1891—one on the 15th and the other on the 27th. January 30, I suspended the antisyphilitic remedies, and ordered Charcot's "black mixture," bromid of sodium, pepsin and charcoal in glycerin and water. He disappeared.

April 7 he again consulted me, expressing himself as anxious for operation, as the convulsions returned early in February, and were getting very hard and numerous—sometimes two in one day. Two or three general epileptic seizures had occurred within two weeks, the pain in the head was becoming unbearable, and his general health failing. He had an attack of minor degree in my office, tallying well with his previous description; urine passed about an hour later showed specific gravity of 1032, with sugar in considerable quantity, but no albumin or phosphates. I prescribed 6 drops of the fluid extract of syzygium jambolanum thrice daily, and a tonic of arsenic and bitters. Under this he improved in his general condition, the glycosuria disappeared, and he was in such good shape that I sent him to the hospital April 24.

Operation April 26, assisted by Drs. Monks and Maxson. On removing a portion of bone 2 x 3 inches over the speech and arm centers, the dura presented an unduly tense feeling, but did not protrude into the opening, nor present any evidence of abnormal growth upon it—so it was incised in a horse-shoe flap and turned back. The brain showed through the pia as slightly reddened beyond the normal; closer inspection showed what appeared to be a tumor, and palpation revealed a hardness that ought not to be present, situated just at the lower end of and anterior to the fissure of Rolando. I therefore attempted to raise the pia, but finding that too much traction wounded vessels of considerable size, I carefully tied vessels running in the direction of the affected area by slender catgut, and then cut through the somewhat elevated cortical tissue—very gently, for fear of wounding tissues which should escape injury. A small tumor, of pinkish-white color, was thus disclosed, and examination showed that it did not present firm attachments;

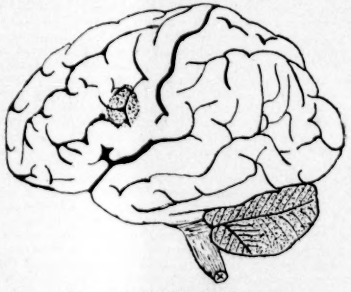

Diagram showing location of tumor.

that is, it did not infiltrate surrounding structures. Attempts at enucleation, however, proved futile, and I was therefore compelled to remove the tumor by means of a sharp spoon, thus preventing microscopic examination—much to my regret. The tumor was the size of a very large cherry, and was quite vascular; the surrounding tissue, too, was engorged, and consequently hemorrhage was very brisk. However, I succeeded in curetting away all diseased tissue, and then tried to arrest the bleeding with hot compresses; this failing, I was compelled to pack the cavity with iodoform gauze, quite lightly, and close the dura and scalp around the protruding gauze. No attempt to replace bone was made. Duration, fifty minutes.

The patient was put to bed in bad shape—shock profound and pulse weak and thready. Eight hours after operation the patient appeared to be conscious but could not speak; the right arm was paralyzed, and so much difficulty in swallowing was present that all medicine was given hypodermically and stimulants and food per rectum. His pulse was 140 and weak and his temperature 102 degrees, and I feared much for his safety. During the night his condition improved somewhat, but the paralysis continued all the next day and the difficulty in swallowing persisted.

April 28, the condition was much the same at 8 A.M., pulse 148, temperature 102.5 degrees. He had slept some during the night. The dressings were removed and the iodoform gauze drainage carefully withdrawn. Very little oozing

had taken place and no bleeding followed removal of the packing—so the separated margins of scalp were pressed together and permanent dressings applied. This day he improved rapidly so that in the evening he murmured, "Water, water," and drank greedily with but little difficulty. Evening temperature 100 degrees.

April 29, speech returned to a remarkable degree and voluntary movements of the right side were noticeable. From this time on, convalescence was satisfactory in every respect, the aphasia and paralysis totally vanishing. He had but one Jacksonian attack—very slight—which was noted the day before his discharge, May 19. He appeared to be in excellent health. I saw him again on June 5, and again upon July 9 at each of which visits he declared himself perfectly cured. He promised to keep me informed of future progress, but I never saw or heard more from him.

It is peculiarly unfortunate that the character of this subcortical growth could not be ascertained. It had the peculiar appearance of glioma. The absence of implication of surrounding tissues would lead one to believe it was not malignant, though the rapidity of growth (October to April) would indicate that such might be its nature. It is possible that it may have begun much earlier than the date set, but from the marked increase in number and intensity of the paroxysms in the few weeks prior to operation, I believe the tumor must have been growing with a deal of rapidity.

I can not leave the subject of tumors without giving a short description of my other fatal case:

Cyst of the Arachnoid—Operation—Death.—Wm. K., from the Indian Territory, was brought to me by Dr. O. W. Krueger, Jan. 8, 1892. The previous history was not obtainable to my satisfaction, but it seems that he was as intelligent as other boys until about the age of 14 years when he began to have epileptic convulsions of the right side, followed by temporary aphasia. The spasms finally became general, partaking of all the characteristics of *grand mal* including the mental deterioration. Finally, partial paralysis of the right side gradually made its appearance accompanied by difficulty in remembering names and other nouns. As the epilepsy increased in severity this paralytic influence deepened until at last he was completely paralyzed in the right upper extremity, the use of the lower was so greatly impaired as to prevent walking, and language became totally obliterated. He frequently read the papers for a little while at a time and seemed to understand much of what was said, though his intelligence was evidently greatly impaired.

Owing to the fairly clear, though not wholly satisfactory evidence, that the convulsions invariably began in the right hand, then spread until the whole body was involved, and also to the existence of the aphasia, I had him sent to the hospital where I opened the skull, assisted by Drs. Krueger and Maxson. Upon opening the dura a cyst of the arachnoid was found, much larger than a hen's egg, lying over the speech and arm centers. This I tried to remove entire, in doing which I fear I exerted too much pressure upon the brain, for the patient ceased breathing (although no chloroform had been given for several minutes) and only revived by long-continued artificial respiration. I hastily cut away the cyst and closed the dura, only stopping to notice that the speech and arm centers were of a very pale hue wholly unlike the surrounding cortical tissue, and that the impress of the tumor upon the brain did not disappear with removal of the cause. While closing the dura, another suspension of respiratory efforts was noted and again artificial respiration had to be instituted. The wound was quickly closed and dressed and the patient placed in bed as hastily as possible, when every possible means to combat shock was employed—to no avail; he died within a very short time. An autopsy was not obtainable.

What the result might have been in this interesting case can be only a matter of surmise; but from the long continuance of the pressure upon the two important centers, I feel sure that the prospect of complete recovery was not good, but probably the mental condition would have vastly improved had he lived.

While the direct cause of this patient's death is somewhat of a mystery to me, I can not but feel that I did wrong in attempting to secure a beautiful pathologic specimen—it would have been better surgery to simply open and drain the cyst, which was evidently not malignant—but I did not know at the time that such treatment would yield satisfactory results. Since then I have treated one other simple cystic tumor by such means and with perfect results. My seventh and eighth cases were in young patients, of tubercular character, and gave no points of especial interest save the satisfactory and speedy recoveries. They will be reported in due time in some medical publication.

Based upon this experience, and a careful study of the subject of brain tumor, I give you these

RULES FOR TREPHINING.

When to Operate—1. A headache, which becomes more and more intense, persisting for weeks, with later exacerbations of an agonizing character, followed by stupor, disturbed sleep, loss of memory and optic neuritis, is a strong indication of tumor in the frontal region and warrants exploratory trephining; upon both sides, if necessary, in order to find it.

2. A tumor of the frontal convolutions, as indicated by the signs just enumerated, may encroach upon the motor zone so as after a time to give rise to some focal symptoms (spasm or paresis); in which case the trephine should be applied just in front of the coronal suture of the side opposite to the motor symptoms.

3. Tumors of the mid-brain may present as evidence of their existence, a tendency to stupor, occasional irritability and childishness with disturbances of the motor area (Jacksonian epilepsy) and papillitis—generally choked disc; craniotomy over the upper Rolandic region is the proper treatment.

4. Disturbances of the muscular sense, with the usual mental impairment and with choked disc, are sufficient to justify examination of the supra-marginal gyrus.

5. When the symptom-group consists of word-blindness and lateral hemianopsia, with moderate loss of power in one-half of the body, the skull should be opened over the region of the inferior parietal lobule and angular gyrus.

6. Homonymous hemianopsia, not dependent upon other cause than tumor, indicates operation over the cuneus and first occipital convolution.

7. When hemianesthesia accompanies lateral homonymous hemianopsia, the lesion lies between the cuneus and the primary optic centers; trephining should be done so as to expose the point where the occipital, parietal and temporal lobes meet.

8. A tumor giving word-deafness as its most prominent symptom, may be reached by opening the skull on the left side in the region of the posterior part of the first and the upper posterior part of the second temporal convolutions.

When not to Operate—1. It is useless to attempt operation in cases of undoubted brain tumor, when the growths are situated in the corpus callosum and the optico-striate region.

2. It is questionable whether or not operation is advisable in cases in which the usual symptoms of tumor are accompanied by disturbances of speech as the *only* "localizing" sign; the lesion will probably be found to be not near the speech center, as one would infer, but affecting the pons, medulla and the point of origin of the cranial nerves.

3. Nystagmus, either unilateral or double, permanent or temporary, complicated by paralysis of the motor nerves of one or both eyes, constitutes a barrier to operation as the trouble is unquestionably basal.

4. When nystagmus appears in the history of a case suspected to be tumor, associated with epileptic attacks or hemiplegia, the tumor may be upon the convexity just behind the fissure of Sylvius, but so often this is *not* the location that operation can not be advised.

ORIGINAL ARTICLES.

FORCIBLE ALVEOLAR EXPANSION IN THE TREATMENT OF CONSUMPTION.

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In the search for a cure for this most deadly of diseases, it seems that experimentation has been directed entirely toward the discovery of some wonderful specific, (to the exclusion of the simple truths of physics, anatomy, physiology and pathology). All the energies of the profession and of manufacturing chemists have been spent in the vain hope of finding this specific,—to their great pecuniary advantage.

Now that the specific hunters in Germany and elsewhere have about lost themselves in the mazes of organic chemistry, it might be profitable to work over some old knowledge in these branches, which has been at a discount for some time past.

A classic paper on this subject was read in the Philadelphia County Medical Society, by Dr. Thos. J. Mays, and appeared in the *New York Medical Journal*, March 10, 1888, entitled, "Apex Expansion vs. Pure Air in Pulmonary Consumption." Concerning the cure of consumption, the following conclusions were drawn: "That the question of curing the disease did not depend on the purity or freshness of the air, nor upon the number of bacilli the atmosphere might contain, nor upon the amount of oxygen which might be introduced into the body—for these were all secondary considerations; but it was simply a mechanical question,—a question as to the best mode of expanding the lungs, and especially the apices of round-shouldered and flat-chested patients, of removing the infiltrated products already existing, and of enhancing the constitutional resistance."

It may be said that the tubercle bacillus inhabits the lung tissue as an infection of tissue already damaged by hereditary malformation, sluggish circulation, or the extension of catarrhal bronchiolitis, plugging the alveoli. The bacillus aids in the extension of the infiltration, the same as other infectious germs poison tissues which have been injured. Dr. Prudden has recently shown how the presence of the germs of suppuration hastens the destructive processes by cavity formation in a previously tubercular lung, when the two processes of tuberculosis and suppuration run a simultaneous course.

Has it never occurred to these "specific" hunters that if a remedy should be found which would kill the bacilli *in situ* in the tubercularized tissue, the alveolar plug of gelatinous matter would still remain as a spore—containing a source of irritation; and as soon as the remedy should be withdrawn, the disease would break out anew? "An empty house is better than a bad tenant." The treatment which does not drain the alveoli, empty them, and restore ventilation, will never be of very great benefit. In the case of mastitis, where the galactiferous glands and tubes are plugged, their drainage is accomplished by nursing, the tubes are emptied and healthy conditions and functions restored.

Minute anatomy and physiology tell us that the alveolar wall is composed largely of elastic tissue, which aids in the expulsion of air when released by the relaxation of the muscles of inspiration. Air pressure will dilate them the same as any elastic vessel, and as soon as the pressure is removed, this elasticity together with the expiratory muscles, forces out the contained air as well as any fluid which happens to be in them. The alveolar plugs are composed of a thick gelatinous and albuminous fluid. These plugs irritate the lung tissue and become the foci for extended infection. The elasticity of the alveolar walls is retained until the inflammatory process has progressed to the destructive stage, then there is necrosis of portions of the consolidated area. If we succeed in an effort to empty the air cells of this plug, the cell walls retain their continuity and a return to health is inevitable. In surgery, drainage of wounds and cavities probably septic, is absolutely necessary to the healing process. Physiologic drainage of the alveolar cavities is just as certain to give good results. This drainage is a simple mechanical procedure possible of accomplishment by every patient. The gelatinous plugs with their bacilli are carried out by the air current into the larger tubes and expectorated. These principles have been the basis for the method I have pursued in the treatment of the cases in this report.

The method was described in an article which appeared in the *New York Medical Journal* Oct. 13, 1894, entitled, "Forcible Apex Expansion in Incipient Phthisis." It consists not only in full breathing, which has been recommended in various ways, but after a full inspiration, the breath is held for a moment by closing the glottis—*just as the breath is held while straining at stool*, so as to increase the air pressure in the lungs. It should produce a ballooning of the chest and consequently of the air cells themselves. The effect is increased if, during the holding of the breath, the lower chest is compressed with the hands, which action forces the air into the upper chest where the consolidation usually is, and at the same time lifting the weight of the arms and shoulders off the chest. After a time the inspirations become much fuller and a higher tension develops. If the patient is weak, the breath should not be held more than two to five seconds; with increasing strength the time may be extended a few seconds at each effort. But the length of time the air is held is not important, the tension which can be developed being the end desired. These efforts may be continued regularly every two hours during the day, before arising in the morning and after retiring at night, as there is probably more air inspired in the recumbent position, because the weight of the arms is removed from the chest. Holding the breath has been mentioned by some writers, but usually the patient is directed to exhale slowly at the same time. It is thus performed without closure of the glottis, by simple exertion of the inspiratory muscles. No tension is developed and it is consequently only an inspiratory exercise, and fails to accomplish the end desired because it does not forcibly dilate the alveoli. The

direction to hold the breath is very indefinite without specifying the manner in which it must be held. An inhaler may be used with some antiseptic and soothing inhalant and to stimulate interest in the treatment. The patient may be told to inhale deeply so as to get the medicament well into the lung tissue. It will require some practice in order to get the best results, but an ambitious patient will pick it up very quickly. The immediate result will be an increased amount of oxygen in the blood, a strengthened heart's action, and a facilitated expectoration, which alone gives relief. In young persons the elasticity and capacity of the chest will be permanently increased, the progress of the disease inhibited and immunity from future attacks almost insured.

The treatment by differentiation of air has a similar effect on the lungs, but in order to be of much benefit more than one treatment a day would be required.

The contra-indications are hemorrhage, and for a few days after it has stopped, the pulmonary gymnastics should be suspended. But, I think in my cases the treatment has had rather a beneficial effect on the hemorrhagic tendency, probably because the pressure tends to close up the bleeding vessels. A weak right heart and possibly any heart disease would require great care in introducing even a slight and temporary obstruction to the pulmonary circulation. However, such cases are quite rare and will not greatly interfere with the general adoption of the method.

The existence of cavities seems to be no contra-indication, as in one case not in this report the whole left lung seemed to have been reduced to cavities and the treatment has been followed with success for over a year. Pleurisy, if quite general, will be aggravated by the chest movements for a time until the consolidation begins to disappear. To overcome the muscular atrophy about the chest any gymnastic exercises will be of benefit. At the same time, proper medication should be employed in order to increase the chances and rapidity of the recovery, improve nutrition, stimulate blood formation, or in any way improve the condition of the patient. For high fever, I believe bathing is the proper antipyretic.

The rapidity of the improvement will depend greatly on the extent of the consolidation, and the capability of the patient to understand the necessity, and the zest with which he pursues the treatment. A frivolous person will not put forth enough energy to take a full breath and hold it, or even test the treatment,—as in one of my cases I could not get the patient once to take a full breath; although the case is reported, I do not consider that the treatment was ever tried twice in this case.

The histories of the following cases demonstrated the efficacy of the treatment as well as the accuracy of the principles which lead up to it:

Case 1.—Mrs. M. J., aged 35, no tubercular family history. During the winter of 1892–93 had a severe attack of bronchitis and in March, 1893, asthma was added to her torture. In May and June there was improvement in the asthma, but the expectoration was profuse. There was then afternoon fever, rapid pulse, night sweating, and emaciation—pleuritic pains and soreness through the right upper chest. Examination of the sputum revealed the presence of tubercle bacilli. Physical examination showed a marked area of dullness posteriorly over the right apex, by the slight dullness, bronchial respiration, bronchophony and râles. The treatment included an inhaler using a eucalyptol mixture, tonics when they seemed to be of any benefit, a trip to a farm in the country, and the pulmonary gymnastics or breathing exercises, holding the breath as described and other physical exercises with Indian clubs, the exerciser, or any means which tend to develop the muscular system. In December, 1893, physical examination showed that the area of consolidation had entirely disappeared, and there had been steady general improvement during the whole treatment. At present she is practically proof against the tubercle bacillus.

Case 2.—Miss H. M., aged 28, stenographer; mother died of consumption. Began treatment August 9, 1893, for hay fever, which was readily cured by the removal of some post-nasal hypertrophy. Had been feverish and losing weight and strength, sweating at night, and coughing of late. Physical examination showed a marked consolidation at the right apex. As the expectoration was scanty, no microscopic examination was made. Treatment much the same as in Case 1, save that the patient had only a short vacation of two weeks from work. As she was ambitious to get well she pursued the treatment with great determination. In this case I was able to examine the patient frequently enough to observe the rapidity with which the infiltration disappeared so that I was able to foretell almost the exact time it would take to remove it and pronounce her practically cured. Feb. 1, 1894, the lung had entirely cleared and the symptoms of the trouble had disappeared. Her weight had increased to normal and to this day she is well.

Case 3.—Mr. J. A., aged 32, student, whose family history reveals the fact that four sisters have died of consumption. He came to me Nov. 1, 1893, feeling very miserable, was coughing, losing weight, sweating at night, afternoon fever; temperature 100 to 102, pulse 96 to 110. Physical examination disclosed a considerable area of consolidation over upper half of left apex. Microscopic examination showed numerous bacilli. Treatment brought about a complete recovery by the latter part of March, 1894. At this writing he assures me that of all the colds he has had this winter not one has extended below the larynx, when previously every cold he had descended to the chest, and that he is entirely well and weighs 148 pounds.

Case 4.—R. D., aged 26, began treatment Dec. 23, 1893, having hypertrophic rhinnitis and catarrhal laryngitis. Weakness, emaciation and fever induced me to examine the lungs when the evidences of consolidation of the apex of the left lung were unmistakable. As one reputable physician had previously diagnosed the case one of tubercular laryngitis, I felt considerably interested in the case. Treatment was followed by complete recovery, in the month of April, 1894, and his health remains good to this day.

Case 5.—Mr. H. P., aged 49, carrier, came to me Feb. 18, 1894, having cough with profuse expectoration, pain in the right side, emaciation, having lost twelve pounds, losing rapidly the past month. Physical examination showed an area of consolidation in the lower anterior portion of the middle lobe of the right side. Patient often had an evening temperature as high as 102.5 degrees F. Pulse rapid, especially during fever. Bacilli numerous in the sputum. Treatment brought about a slow but steady recovery and all signs of the local lesion had disappeared in November, 1894. This patient was almost constantly out of doors, and if fresh air will prevent tubercular consumption, he should never have developed the disease.

Case 6.—Miss B. A., aged 18, began treatment March 23, 1894, having had hemoptysis, the two nights previous. Has coughed for some months, fever every day, mostly in the afternoon, ranging from 101 to 103 F., emaciation and night sweating. Examination showed consolidated left apex. Treatment included ergot for hemorrhagic tendency and tonics. Pulmonary exercise was neglected by this patient. I endeavored in every way to induce her to continue the practice, but failed, and in the course of two months she passed from my charge and has since died.

Case 7.—Mr. C. H. M., aged 38, came to me April 12, 1894. Had had attacks of stomach disorders for several years, emaciation, slight cough, scanty expectoration, containing a few scattering bacilli. Physical examination showed infiltration of the apex of the right lung. Temperature 100 F., pulse 90 to 100. Treatment removed every trace of the trouble in eight months.

Case 8.—Miss L., age 24, came April 18, 1894, having a temperature of 101, pulse 90, hypertrophic rhinitis, slight cough, and scanty expectoration, emaciation and profound prostration, tired all the time, weight 95 pounds. Physical examination showed increased expiratory murmur over right apex, also voice and whisper sounds, with dullness on percussion. Treatment was energetically carried out and in

August every sign of the lung infiltration had disappeared, her general condition improved and weight increased to 115 pounds.

Case 9.—Miss E. P., aged 25, came to me May 7, 1894, having severe pain and tenderness in back of upper dorsal region. Had been failing rapidly during the winter, with irritating cough and scanty expectoration, afternoon fever and rapid pulse. Physical examination found consolidated right apex, with some pleuritic friction, sounds, soreness, and pain in that region, chest expansion twenty-six to twenty-seven inches. Treatment removed the area of consolidation by November.

Case 10.—Mr. C. J. D., aged 24, consulted me June 26, 1894, for relief from fever, night sweating, loss of weight and strength, and cough. Weight 112 pounds. Upon examination I found dry râles, and the usual evidences of a consolidated right apex extending as low down as the third rib. Temperature 101 to 102, afternoons. Pulse ranging about 100. Microscopic examination showed numerous tubercle bacilli in the sputum. Treatment at once instituted and followed out vigorously, brought a complete cure. August 29 there were no râles or other signs of the consolidation discoverable; and later in the fall he recovered all his lost weight.

Case 11.—Miss L. K., aged 29, consulted me July 20, 1894, for supposed nasal catarrh, and a generally run down condition, weight 99 pounds. She had afternoon fever, cough, but scanty expectoration. Upon examination, the usual signs of consolidation of the left apex were found. In two months treatment she had gained ten pounds, and in one month more the lung tissue had resumed a normal condition.

Case 12.—M. H., aged 23, book-keeper, consulted me Feb. 27, 1895 for an irritating cough and general weakness, following a recent attack of la grippe. Patient was never in good flesh, being tall, thin and pale, recently losing strength, and what little superfluous flesh he had. Had afternoon fever, pain in the left upper chest, expectoration mostly in the morning, which on microscopic examination was found to contain numerous bacilli. Examination of the chest showed moist râles, slight dullness and bronchial breathing over left apex, anteriorly and posteriorly. Treatment at present writing is giving the best results, having reduced the afternoon fever from 101 to 99, increasing the weight by six pounds and restoring almost his normal strength and feeling.

Case 13.—R. W., aged 30, merchant, seen in consultation with Dr. A. Salter at Lena, Ill., April 15, 1893. For six months or more previously had night sweating and emaciation, weight 128 pounds, temperature, morning 95.5‡ to 97, and every afternoon as high as 102 F.; pulse 90 to 100. Examination disclosed a complete consolidation of the right upper lobe. Treatment including tonics and 10 minim doses of creasote three times daily, alternating with hypophosphitis. Breathing exercise was begun and improvement began in two weeks, which was steady until January 1894, when there were no signs remaining of the lung infiltration. His weight at present is 150 pounds, and he is an active business man.

Case 14.—Mrs. H., aged 33, was also seen with Dr. Salter, Feb. 4, 1894. Had been taking various remedies for a year or more for a cough and other pulmonary symptoms, complaining mostly of pain in the shoulders and upper chest. Upon examination the right apex was consolidated, and slight infiltration of the left apex. While before treatment the patient was so poorly that she could do no housework, she has recovered sufficiently to do her own housework, gaining twelve pounds in weight, and two inches in chest expansion. There are at present no signs of the old consolidation.

Case 15.—Mr. J. H., aged 28, book-keeper. This man was seen in consultation with Dr. P. L. Anderson of this city, June 1, 1894, having in all about fifteen hemorrhages; night sweats; temperature 102 F.; pulse 120; profound weakness; barely able to do light work. Sleep greatly interrupted by coughing and a great amount of expectoration. Microscopic examination showed very large numbers of bacilli. Patient had attacks of asthmatic coughing, and hay fever symptoms during September. Upon examination of the chest the lower lobe of the left lung was found consolidated, also the apex of the same side. This patient has not been seen for some months, but at my request he came in for examination. He says that he had considered himself cured, having increased in strength so as to be at work every day—weight increased from 128 to 145 pounds. He coughs some, however, and expectorates most in the morning. He says that he has not practiced the pulmonary gymnastics for some time. Upon examination pulse and temperature are normal, as also were the respirations. The left chest was found somewhat contracted, and the respiratory capacity diminished. Percussion note same on both sides; auscultation revealed no bronchial breathing or voice sounds, or anything that would indicate consolidation. There were, however, a few fine and some coarse mucous râles, with diminished vesicular murmur over the left lower lobe and the upper half of the left upper lobe. Also there were heard some faint pleuritic friction sounds over the left apex. This case is interesting, in that it shows how extensive and how rapid the tubercular processes may be, and still be entirely checked and recovery take place in a comparatively short time by this system of treatment. The condition of the left lung at the present time may be considered as practically restored; although there still remain catarrhal processes in the bronchial tubes, some few scattering plugged alveoli and others which are entirely collapsed or obliterated and replaced by cicatricial tissue which interferes with its normal elasticity and respiratory capacity.

Case 16.—Mrs. B. P., age 33. This case was also seen in consultation with Dr. Anderson some time in March, 1893. A diagnosis of pulmonary consumption was made in September, 1892, by Dr. Anderson and confirmed by Dr. Wm. E. Quine of this city, and the patient advised to go immediately to Albuquerque, N. M. Patient remained in New Mexico about four weeks during which time she suffered greatly from pleuritic pain, becoming extremely weak, night sweating, chills and fever, temperature at times as high as 103 degrees F., lost all appetite and it was with the greatest difficulty that she stood a stage ride of thirty miles to the nearest railroad to Colorado Springs. During a stay of two weeks in Colorado Springs she was much worse than in New Mexico. Believing there was no hope for recovery she came home. Soon after her return to Chicago, she began to improve and was able to come to the office for consultation. I made an examination of the chest and found the usual evidences of tubercular deposit in the apex of the right lung, accompanied with the most extensive pleuritic friction sounds I think anybody ever heard over the upper half of the chest. Deep breathing caused a great deal of pain in the chest. Pain was the most distressing symptom in the case, while there was also a great deal of emaciation, anemia and night sweating. Weight 110 pounds. She was cautiously trained in the pulmonary gymnastics and light physical exercise. Notwithstanding the pleurisy and the pain caused by the taking of full breaths, this patient continued the pulmonary gymnastics until every sign of the consolidation had disappeared, which was in September, 1894. There is still considerable pleuritic pain but nothing compared to what she had previously suffered.

It would seem from the results in this case that chronic pleurisy is no important contra-indication, and it must be decided by the results after a cautious trial in each case. Some patients with sufficient practice may be able to hold the breath at a tolerably high tension, enough to inflate the alveoli without much chest motion.

To recapitulate the cases:

Recoveries 13; improved and under treatment 2, dead 1.

I consider that of the sixteen, fifteen are consecutive recoveries, the remaining one not having followed out the treatment.

Phthisis is curable by the application of well-known mechanical principles, viz., the inflation of an elastic air sac with elastic air, which gradually during expiration expels the semi-solid or fluid contents. It is necessary in order to get the quickest and best results, to begin treatment while the sac wall is still intact and elastic, for when it is once broken down and cavity formation has begun, then the area must heal by cicatrix.

In the matter of prevention of consumption, the same process of alveolar ventilation is necessary and absolutely certain of results. During the years of physical growth and development the puny, flat-chested, round-shouldered children should be taught proper methods of breathing, together with occasional forcible expansion of the chest. While the

bony chest wall is still elastic it should be developed. After the age of 25, the capacity for chest development is necessarily limited.

126 State Street.

SERUM THERAPY IN PULMONARY TUBERCULOSIS, WITH AN EXPLANATION OF SECONDARY SYMPTOMS FOLLOWING THE ADMINISTRATION OF ANTITOXIN.

BY CHARLES WILSON INGRAHAM, M.D.
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Much has been written in regard to certain unpleasant and untoward symptoms attending the administration of antitoxin in cases of diphtheria. There has been a disposition on the part of physicians to attribute these symptoms to some peculiarity of antitoxin after its introduction into the system of diphtheritic patients. Some regard them as due to secondary septic infection. I believe, however, that I shall be able to prove substantially that these identical symptoms will follow the administration of pure serum with the same certainty and severity as they follow the use of antitoxin. I base this statement upon the manifestations which I have observed to follow the administration of serum from the blood of the mule in cases of laryngeal and pulmonary tuberculosis.

The most constant and unpleasant symptom following the administration of mule serum is the intense eruption which covers every portion of the body and gives rise to terrible itching. The eruption is of a bright red appearance and if scratched too persistently will assume for a short time the form of a large "water blister" which appears suddenly. It remains for a greater or less length of time, usually a few hours, and then disappears as suddenly as it made its appearance. Accompanying the onset of the eruption there is marked anorexia and depression.

Another symptom which fortunately does not appear as frequently as the eruption, but which is very much more painful and serious, is the "neuralgic pains" which are most apt to occur in the neighborhood of the point of injection, but which may occur in a remote part of the body. The pains are usually of so severe a nature as to deprive the patient of sleep, even after an opiate has been administered. I have known them to continue for twenty-one days without interruption, although this is an unusually long period.

In my experiments with serum, I used that obtained from the mule, because of the recognized immunity of that animal from tuberculosis.

In December, 1894, I obtained a full grown, healthy mule, and after he had by good care and feeding been brought to an excellent standard of vitality, tapped the jugular vein and drew therefrom a quart of blood. The most careful antiseptic precautions were observed in the operation. The hair was shaved for a radius of several inches around the site of the intended incision. The skin was then cleansed and finally washed with pure alcohol. The lancet used, was procured especially for the purpose and was thoroughly antiseptic. The blood was received in a glass jar, especially prepared. (I mention these precautions to show that the results finally obtained from the serum were not due to any infection consequent upon its preparation.) The blood was allowed to stand twenty-four hours, and the serum was then drawn off and filtered through antiseptic filter paper. This work was done in a cold room to protect against putrefaction changes. After the first filtering the serum was allowed to stand a few hours, when it was observed to have thrown down a slight sediment. After a second filtering no sediment was observed. An effort was made to add a 5 per cent. solution of carbolic acid, but by every method tried, a precipitate was thrown down and the serum became cloudy. The serum used was, therefore, the pure article, without additions of any description. The serum was preserved in antiseptically prepared vials, which were hermetically sealed and only opened as immediately needed. Syringe used was an ordinary one drachm, rubber piston, and when not in use was kept filled with alcohol. The greatest care was observed in cleansing it, following its use. Gold needles were used.

The first case treated was one of tubercular laryngitis, with secondary pulmonary involvement. Cough was severe. Expectoration profuse and purulent.

Dec. 31, 1894. First injection was administered in the lower part of the thigh. The amount given was 1 drachm. On the second day dose was increased to 2 drachms. Cough seemed to improve at once and expectoration diminished slightly. No other appreciable improvement either in symptoms or local condition. The site of injection gave rise to no swelling or inflammation, more than that attended by needle puncture, and I was congratulating myself upon the ease with which these treatments could be administered when my hopes were severely crushed. On about the tenth day the patient complained of severe pain shooting up and down the thigh. Examination of the limb gave no indication of inflammation. Next day, however, the limb was swollen, the pain was worse and patient was put to bed. Pain was so severe that a hypodermic injection of morphin was given and poultices were applied over the painful area, but with little relief. Patient slept but little for nearly a week, at the end of which time the pain was a little better, but it did not disappear until the twenty-first day from its beginning. The limb was at no time much swollen and there was scarcely any rise of temperature, except during the period of eruption which appeared soon after the pain set in and continued about four days. Subsequent injections, after the pain had entirely disappeared, did not give rise to any further pain or eruption. Patient received a total of between forty and fifty injections of the serum of 1 drachm each, but at the end of the treatment no improvement whatever, either in symptoms or physical signs, had taken place.

At first I was inclined to believe that the pain and eruption were due to something peculiar in my supply of serum, or perhaps also to some extent due to the condition of the patient, but seeing in current medical literature reports of cases of diphtheria treated with antitoxin which gave rise to symptoms so closely identified with mine, I concluded that the origin of these unpleasant manifestations was to be found in the primary serum.

In eight cases of pulmonary tuberculosis, subsequently treated with the serum injections, the eruption was a typical attending symptom, while the pain did not occur unless a large amount of serum had been injected in a short period of time. From

my study of and experience with these cases, I came to the conclusion that a very minute quantity of serum would give rise to eruption as intense and in every way identical with the eruption following the administration of large quantities; that the pain was not a constant after-effect, only appearing when a large amount of serum had been given; and that with proper precautions, and by not throwing too much serum into the system in a short period, the pain would be wholly obviated. The eruption would appear in from three to ten days following the first injection. In one case where only one injection was given, the eruption was very severe. The eruption would usually continue for a period of from three to seven days and would be accompanied with a marked rise of temperature, which in a few instances reached 104 degrees. I have noticed that the eruption was more severe in cases of pulmonary tuberculosis of an acute nature. The most remarkable phenomena or results following the eruption is a total disappearance of fever for a period of from twenty-four to forty-eight hours and a temporary improvement in general symptoms. I am sorry to say that this marked relief following the eruption is only temporary. I have never seen any results of a permanent nature. Cases of acute tuberculosis in whom the temperature ranged from 103 to 104 degrees daily, previous to the injections, would be entirely relieved from the fever for a period of from two to three days, only to be followed, however, by its return to its former height and persistence, nor would there be any appreciable improvement of symptoms or physical signs of a permanent nature.

Although the injections were administered for a sufficient length of time for them to manifest any curative properties, I am obliged to record that I did not in any individual case see an improvement that would warrant a continuance of the treatment.

I do not, however, wish to be understood as condemning this line of treatment for the relief of pulmonary tuberculosis, although I am of the opinion that serum therapeutics will find its greatest range of usefulness in the treatment of acute diseases and in the prevention rather than the cure of chronic diseases.

The results which I have obtained, certainly show that serum from the blood of the mule has a limited control over tuberculosis, and even though the results are only temporary, it is highly probable that by increasing the antagonistic properties of the blood by the systematic injection into the animal of toxins designed to increase these natural antitubercle powers, the serum might be brought to a state in which its administration would give definite results, as a preventive of tuberculosis and perhaps as a curative agent in the very incipient stages of the disease.

This paper will prove, however, that the eruptions and the pain which have followed the administration of antitoxin in cases of diphtheria are not dependent upon anything peculiar to antitoxin or to its injection into the system of a diphtheritic patient.

The effects of simple primary serum from the blood of the mule, injected hypodermically into the system of persons afflicted with pulmonary or laryngeal tuberculosis may be summarized as follows:

1. A fine rash or eruption producing intense burning and itching, which appears usually from three to ten days following the first administration, and continues from three to seven days, when it disappears permanently. In some cases it appears only at night, disappearing completely during the day. Exposure to the cold open air makes the eruption more intense. Rubbing or irritation of the rash will produce large eruptions having the appearance of "water blisters" which soon disappear. The intensity of eruption bears no proportion to the amount of serum injected.

2. Severe pains of a neuralgic character which only appear following the administration of a large amount of serum. These pains appear with no regularity whatever, neither are they manifested for any certain length of time. In most cases their severity is governed by the quantity of serum injected. These pains do not yield readily to the influence of opiates or other treatment. They usually appear near the site of the injection, but may appear in a remote region.

3. The typical eruption is accompanied with a pronounced rise of temperature. This temperature is also present some hours before the eruption makes its appearance. Temperature may reach 104 degrees or even higher. It remains at its full height with little or no fluctuation until the eruption becomes less intense.

4. Following the disappearance of the eruption, the temperature drops to normal, or even below normal. If the case is one of acute tuberculosis and has had a high temperature, the diminution of fever will be as pronounced as in the milder form. The temperature will remain nearly normal for two or three days, after which it gradually resumes its former stage. In one or two cases the temperature remained low for nearly one week, but eventually it resumed its former height.

5. Swelling or puffiness of the extremities, lips and eyelids sometimes accompany the eruption, but usually subsides as the eruption disappears. In one case the swelling of the lower limbs persisted in a milder degree for several days after the eruption had disappeared.

6. Subsequent injections of serum do not cause a second eruption, though the pain is liable to return if too much serum is given.

These symptoms or results bear so exact a resemblance to those which many times follow the administration of antitoxin that I venture to assert that one and all of these secondary manifestations, which cause so much annoyance, not to say danger to the convalescent diphtheritic patient, are due to the effects of primary serum. That these manifestations are no more severe following the use of antitoxin than following the use of primary serum.

CAMPHOR-MENTHOL; A SUPPLEMENTARY REPORT.

BY SETH SCOTT BISHOP, M.D.

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CHICAGO.

Since the introduction of this remedy at the meeting of the Mississippi Valley Medical Association in 1891, and published in the JOURNAL, it has come into quite general use for catarrhal conditions of the upper respiratory tract. But inquiries have not ceased to come from various parts of the country concern-

ing the method of its application, and for the details of my experience with it since. The purpose of these notes is to answer such questions.

Although I did not recommend its use until long after I had discovered that the union of these two camphors resulted in a fluid of the chemic formula $C_{10}H_{16}O$, and after I had satisfied myself that we possessed a valuable remedy in this new drug, I am now able to express greater confidence, and to verify my former statements by the experience of others, as well as by my daily use of it up to the present time. The experimental stage has passed, and the efficacy of this medicine is clearly established. Specialists who were at first skeptical as to its virtue, have since adopted it as a standard remedy in both private and dispensary practice. I have taken pains to ascertain the results of their experiences, and add them to my own.

The field of application in which camphor-menthol has proved most efficacious is in the following diseases: coryza, hay fever, intumescent rhinitis (intermittent and alternating nasal stenosis), hypertrophic rhinitis, simple sore throat, acute laryngitis, tracheitis, bronchitis, and cauterizations to prevent hemorrhage and inflammation.

The indications for its use are made clear by a consideration of its physiologic action. It contracts the capillary blood vessels of the mucous membrane, reduces swelling, arrests sneezing and irritation, checks excessive discharges, and corrects perverted secretions.

For home use and ordinary office treatment, I do not employ a stronger solution than the 3 per cent. in lavolin, and for very sensitive cases, like hay fever sufferers, the 1 or 2 per cent. solution at first. The lavolin itself is a bland and soothing protective to the membrane, and in the combinations indicated we have undoubtedly the most effective and harmless remedy known. This means a great deal to both patient and physician, for most of the sprays in use give indifferent results—or worse. Indeed, so great has been the disappointment with the old local medicaments, that a well-known writer on nasal diseases entirely abandoned them several years ago.

Patients should be instructed to treat themselves thoroughly every night at bed time, by throwing a spray of the 3 per cent. solution from a lavolin atomizer into both nostrils while slowly inhaling. The rubber bulb should be forcibly and rapidly compressed at least eight times for each nostril. For the throat, larynx or bronchial tubes, the spray should be thrown through the mouth also during inhalation.

In diphtheria, croup, etc., in infants, when it is very difficult to throw a spray into the throat, the medicine may be made to reach the parts by volatilizing it, by placing a few drops of the pure undiluted camphor-menthol in hot water, and causing the patient to breathe the medicated steam, or a few drops can be heated in a spoon over a lamp, and its fumes will impregnate all the atmosphere of the room. Enough medicine need not be used to cause uncomfortable smarting of the eyes. Inflammation of the throat, larynx, trachea and bronchi can be effectually treated by inhaling the camphor-menthol steam from the benzoinol inhaler.

I have found that we can prevent hemorrhage and inflammation, following galvano-cauterization of the turbinated bodies, by gently packing a pledget of cotton wet with a 20 per cent. solution of the camphor-menthol between the burned tissue and the septum, and leaving it there twenty-four or forty-eight hours. It is then replaced by a fresh dressing and, at the end of four or five days, instead of finding sloughs filling the passages, swelling and stenosis, the tissues appear shrunken and mummified, and the strait is clear. Unless the electrode has been allowed to cool before removing, no hemorrhage or only slight oozing occurs. There is also less discomfort following this method than after others. The cotton should not be saturated to dripping with the solution, so as to allow it to trickle down into the throat, and if too much is used, it occasions a copious serous secretion. Advantage of this power of the strong solution to cause stimulation of the glands, and osmosis, can be taken in treating ozena and dry catarrh of the nose and throat. The weak solutions diminish secretions; the strong ones increase them.

Much suffering can be prevented in people who take cold easily, by using the pocket camphor-menthol inhaler. Any one can easily construct it. I have them made, however, with an excess of camphor, while the pure camphor-menthol contains a larger proportion of menthol. By inhaling this for a moment, the instant the irritation of a cold is felt in the nose or throat, the attack can be stopped. Patients who carry these inhalers in their pockets are able to prevent colds during the seasons when they have heretofore suffered repeatedly.

In my first paper on this subject, I gave the directions for preparing this formula, but I have since come to prefer a preparation that is made more cheaply and elegantly for me by Truax, Greene & Co., of Chicago.

Columbus Memorial Building.

CLINICAL VALUE OF THE CHEMIC ANALYSIS OF GASTRIC JUICE.

BY B. BECKER, M.D.
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Professor Bourget, at Lausanne, being looked upon as authority on all questions concerning the chemistry of the stomach, was invited by the organizing committee of the French Congress for Medicine at Lyon, to give a full report of the named question. The result of his experience, gathered during a number of years from 354 patients, differs in many respects from the views of many physicians at the present time, and a sketch of his resumés must be of interest to the readers of the JOURNAL.

Bourget examines the contents of the stomachs of his patients before breakfast, and after a test meal of 200 cubic centimeters of beef tea, 80 grams of chopped meat and 40 grams of bread. After two and one-half hours of digestion, the stomach is emptied by the stomach tube, without aspiration, simply by the contraction of the muscles of the stomach, which under certain conditions is promoted by the insufflation of a small quantity of air. Having emptied in this manner the larger amount of the contents of the stomach, he pours 100 cubic centimeters of water into the organ and empties the same immediately after. By the analysis of the diluted, as well as the undiluted fluid, an exact measuring of the quantity of the contents of the stomach at the time of the experiment is possible. Beside this, an analysis of the acidity *in toto*, of the amount of free as well as combined hydrochloric acid, of organic acids, etc., is made. For

the examination of the total acidity with one-tenth strength of the normal caustic soda, Bourget prefers azolithmin to phenolphtalein, which is mostly used as an indicator, because the latter is unreliable in the presence of peptones. The relation of the acidity of the undiluted to the diluted gastric juice allows the correct estimation of the absolute quantity of acids. For the qualitative analysis of free acid, Bourget uses phloroglucin-vanilin or Boas' resorcin test, while for the quantitative HCl test he usually uses the method of Hazen and Winter.

In young individuals with healthy stomachs, free hydrochloric acid is *always* present. Even after a meal of 300 grams of meat, a percentage of 0.03 to 0.05 of free hydrochloric acid is found, while the quantity of combined hydrochloric acid fluctuates between 0.20 to 0.25 per cent. This gives the impression that the healthy mucous membrane of the stomach has the power to secrete such a quantity of this acid which is in proportion to the amount of nourishment, and that after the saturation of the bases and albuminates, a certain excess of free acid remains.

In all diseased conditions, which lower the activity of nutrition, as chlorosis, anemia, chronic nephritis, etc., the quantity of HCl is diminished. In chlorosis and anemia, free hydrochloric acid is often entirely absent. In neurasthenia great fluctuations are observed; the same patient can have hyperchlorhydria on one day and on the next day he may produce a distinctly hypochlorhydric gastric juice, according to his momentary mental disposition. During the periods of depression, the quantity of hydrochloric acid is usually diminished. In cases of gastrectasis and gastroptosis, the secretion of HCl seems to depend on the motility of the stomach. As long as the stomach is emptied in the normal way, the condition of the gastric juice is almost normal, even in well marked dislocations of the organ. If, on the other hand, the motility of the stomach is insufficient, the juice is also altered by-and-by; free hydrochloric acid disappears first, while the percentage of combined acid diminishes later on.

For some time it was thought that in malign tumors of the stomach, especially in carcinoma, the absence of free hydrochloric acid was almost a pathognomonic symptom of this disease. That this in fact is not the case is proved by the observations of Bourget, who found free hydrochloric acid in nine cases out of twenty-five of carcinoma of the stomach.

Hypochlorhydria is found in a large number of cases of dyspeptic trouble, which are usually described under the general name of gastritis. The quantity of free, as well as combined HCl, is increased; a quantity of 0.18 per cent. of free and of 0.26 per cent. of combined acid is not rarely found. In Reichmann's disease (continued hyper-secretion of gastric juice) the relative quantity of hydrochloric acid can be normal, or hypochlorhydria may exist; while in all such cases the total quantity of the acid is rather large. In one patient of this kind, Bourget found, for instance, after the test meal, 18 grams of concentrated HCl, with a specific gravity of 1016, diluted in two quarts of gastric juice which had gathered in the stomach after the test meal.

There is always found a sufficient quantity of pepsin in any gastric juice; even in advanced cases of carcinoma the peptic power of the gastric juice is always sufficient. It was only in two cases of atrophy of the mucous membrane of the stomach that Bourget could observe the absence of pepsin in the juice. The mercantile preparations of pepsin show a very high digestive power in the chemic test tube, but after the addition of pepsin to the physiologic gastric juice the digestive power of the latter is largely diminished, about one-half after the addition of 0.5 per cent. of pepsin.

Lactic acid is found in those cases where the contents of the stomach remain for a long time in this organ, especially when at the same time hypochlorhydria exists. This is often the case in carcinoma. Butyric and acetic acids are formed under similar conditions. The latter is often formed in Reichmann's disease, because different kinds of fungi of fermentation can very well exist in a 2 per cent. solution of hydrochloric acid.

Now then, what is the clinical value of the chemic analysis of gastric juice? Admitted that it gives some valuable information, we can not form a definite conclusion by it as to the activity of the stomach during digestion. It considers only one side of the question and leaves three points entirely untouched, which are of the greatest importance for the act of digestion:

1. The permanent secretion of gastric juice during the whole time of digestion.

2. The absorption by the mucous membrane of the stomach.

3. The emptying of the stomach into the intestine.

Furthermore, we are not allowed to judge as to digestion in general from the energy of the digestion of the stomach. The digestion of the stomach does not represent more, in a certain sense, than a preparation for intestinal digestion. The latter can be entirely sufficient to support life, while the digestive power of the stomach is impaired. The peptones which are formed in the stomach are not ready yet for assimilation according to the views of Bourget. After the subcutaneous or intravenous injection of peptones formed by the stomach, it was observed that they were eliminated by the urine, and plain symptoms of intoxication were found during this process. If, however, these gastric peptones had been brought in contact with intestinal juice for some length of time, no symptoms of intoxication were observed after their injection, and no peptones were found in the urine.

We also should be careful in our diagnostic conclusions from the chemic analysis of gastric juice. A positive diagnosis of Reichmann's disease only can be made by this analysis. In all other affections, especially in the different forms of gastritis, the chemistry of the stomach is so changeable that upon this alone no positive opinion should be based. In one and the same disease, at certain times, hyperacidity is found; at other times hypoacidity, and again at other times, normal conditions are observed. Sometimes, during the course of the same disease, the result of the chemic tests changes entirely—a primary hyperchlorhydria turning into hypochlorhydria. This goes to show that chemic analysis alone does not justify a positive diagnosis of disorders of the stomach. An examination of the motory action of the organ should never be omitted, because we can draw better conclusions by it as to the general disorders of digestion than by chemic examination only. In consequence of this, a classification of the diseases of the stomach based on the chemic test alone, should not be made. The most important

value of the chemic analysis of gastric juice is that it serves as a guide in therapeutic procedures. We will base on it our dietary and medicinal treatment, knowing if hydrochloric acid or alkalins are indicated in a given case.

Beside the observation of the chemic and motor activity of the stomach, the estimation of the position and size of the organ should never be forgotten. To this end, Bourget recommends insufflation of the stomach. Air is blown into the stomach until the patient perceives a certain sensation of pain, which will set in as soon as the stomach has reached the limit of its normal expansibility. A flabby belly exposes the border of the stomach to the eyesight directly, and it can be marked with a blue pencil, while in a tense and fatty abdominal wall the demarkation has to be made out by percussion. The quantity of the insufflated air indicates the size of the organ. A healthy stomach usually reacts after the insufflation of fifteen to eighteen hundred cubic centimeters of air, while in certain diseases it may receive as much as five quarts before the limit of the expansibility is reached. In this way we can easily differentiate between an ordinary dilatation of the stomach and gastroptosis, vertical dislocation, etc.

ERRORS OF REFRACTION.

A SYLLABUS OF THE LECTURE DELIVERED IN THE JANUARY EVENING COURSE TO THE PHYSICIANS OF THE SPECIAL OPHTHALMOLOGIC CLASS AT THE POST-GRADUATE MEDICAL SCHOOL.

BY FRANCES DICKINSON, M.D.
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These eighteen propositions will assist the beginner to more readily understand the many pages treating of the same subjects in all our text-books.

With a second lecture on the lenses which correct the errors of refraction, and a third lecture on the frames which hold the lenses which correct the errors of refraction, we will have completed the "House that Jack Built."

1. Three essentials to sight—Light; eye; brain.

2. Three characteristics of light; it proceeds—From every point; in every direction; along straight lines called *Rays*.

3. Three directions to rays of light—Parallel; divergent; convergent.

4. Three destinies for light—Absorbed; reflected; refracted.

5. Three varieties of forms of glass reflect light—Plane; prism; curved surfaces.

6. Three combinations of curved surfaces converge rays of light—Convex spherical; convex cylindrical; convex sphero-cylindrical.

7. Three combinations of curved surfaces diverge rays of light—Concave spherical; concave cylindrical; concave sphero-cylindrical.

8. Three refracting surfaces in the eye—Anterior surface of cornea; anterior surface of lens; anterior surface of vitreous.

9. The combined effect of the three refractive surfaces of the eye on the rays of light, be they parallel, divergent or convergent rays is to—Converge the rays; converge the rays alike in every meridian; converge the rays to a point focus; as would a convex spherical lens.

10. Three positions for the foci of all rays of light entering a convex spherical lens, *i. e.*, at, before, and behind the principal focus, or—Entering parallel rays are focused at the principal focus; entering converging rays are focused before the principal focus; entering diverging rays are focused behind the principal focus.

11. Three directions given to rays of light emerging from a convex spherical lens, *i. e.*, parallel, diverging and converging, or—Parallel emerging rays when proceeding from the principal focus; diverging emerging rays when proceeding from a point before the principal focus; converging emerging rays when proceeding from a point behind the principal focus.

12. Three positions for the foci of all rays of light entering the normal refractive media of the eye, making three possible positions for the retina—Entering parallel rays are focused at the principal focus of the refractive media of the eye or on an emmetropic retina; entering converging rays are focused before the principal focus of the refractive media of the eye, or on a hyperopic retina; entering diverging rays are focused behind the principal focus of the refractive media of the eye, or on a myopic retina.

13. Three directions given to light emerging from the normal refractive media of the eye—Parallel emerging rays when proceeding from the emmetropic retina; diverging emerging rays when proceeding from the hyperopic retina; converging emerging rays when proceeding from the myopic retina.

14. Three varieties of meridional or curvature refraction of the refractive media of the eye—Every meridian or curvature may refract alike; the two principal meridians (any two meridians at right angles to each other) may refract unequally, regular astigmatism; different parts of the same meridian may refract unequally, irregular astigmatism.

15. Three conditions of the eye refract alike in every meridian or curvature—Emmetropia; hypermetropia; myopia.

16. Three varieties of regular astigmatism—One meridian may be emmetropic, the other hyperopic or myopic, simple astigmatism; both meridians may be hyperopic, one more so than the other, or both myopic, one more so than the other, compound astigmatism; one meridian may be hyperopic and the other myopic, mixed astigmatism.

17. Three varieties of irregular astigmatism—When the meridians of greatest and least curvature or refraction are not at right angles to each other; when the cornea is conical; when different parts of the same meridian refract unequally.

18. Three refractive abnormalities—Axial myopia or hyperopia—antero-posterior diameter too long or too short; curvature myopia or hyperopia—curvature too great or too little; index myopia or hyperopia—refracting power of media too great or too feeble.

ORIGINAL INVESTIGATIONS ON THE NATURAL HISTORY, (SYMPTOMS AND PATHOLOGY) OF YELLOW FEVER. 1854-1894.

BY JOSEPH JONES, M.D., LL.D.
NEW ORLEANS, LA.

(*Continued from page 633.*)

CHAPTER X.

BLACK VOMIT OF YELLOW FEVER.

The following observations on the black vomit of yellow fever, are the results of labors begun in 1856,

and pursued, in various portions of the Southern States, up to the present time.

I have shown, by numerous careful post-mortem examinations, and by analysis of the blood, black vomit, and urine during life, in various stages of the disease, that:

During the active stages of yellow fever, profound changes take place in the organs and tissues, and especially in the kidneys, heart and liver; and oil and granular fibrinous or fibroid matters (altered albumin and fibrin), transude through the capillaries and fill up the cells and excretory ducts, and arrest or impair the functions of these organs.

The liver of yellow fever does not present the soft friable condition characteristic of true fatty degeneration. The jaundice resulting from the suppression of the excretory function of the liver, would appear to be due to the same causes which induced the suppression of urine, namely, to the deposit of oil and fibrinous matters in the excretory structures of the kidney and liver.

The heart, in yellow fever, appears to be as fully permeated with oil as the liver; in the latter organ, however, a large amount of the oil is inclosed within the liver cells.

Yellow fever is not only attended with what might be called "acute fatty degeneration," but also with such profound alterations of the fibroid elements of the blood as to permit the transudation of the altered fibrin and albumin, through the walls of the capillaries, into the excretory tubes.

Black Vomit.—This ejection of altered blood from the mucous membrane of the stomach, during the period of calm or depression, although not absolutely characteristic of yellow fever, as it may occur in other diseases, is still of so frequent occurrence in yellow fever as to demand the most careful consideration, both as to its nature and origin.

The character of the matters vomited during the progress of yellow fever varies in different stages of the disease, and with the character, relative mildness and severity, and the progress of the changes in the blood and organs.

While yellow fever is characterized, in common with several other diseased states, by an irritation of the gastric mucous membrane, the peculiar nature of the vomited matters does not rest entirely upon the congestion and irritation of the mucous membrane of the stomach, but is influenced to a greater or less extent by the changes of the blood, liver, kidneys and nervous system.

The vomiting in yellow fever may also be regarded, to a certain extent, as salutary, and as an effort for the elimination of certain excrementitious materials from the blood. In some cases, the first effects of the black vomit may seem to be salutary; the tongue improves in appearance, the febrile heat abates, and if it were not for other profound changes in the blood, liver and kidneys, lying back, as it were, of this almost universally fatal symptom, beneficial results of the most important character might flow from the relief afforded by the removal of a certain amount of excrementitious matter, as urea and ammonia from the blood.

The first ejections of the stomach of a yellow fever patient consist most generally of the ordinary secretions and contents of the stomach, then follow vomiting of a mucoid fluid, frequently at first tinged with bile, the reaction of which varies in different cases, being alkalin in some and acid in others.

After the first vomiting the stomach may remain tolerably quiet until the subsidence of the fever on the third or fourth day, when, without any premonitory symptom of nausea, the stomach, on any trifling provocation, may eject a quantity of clear, pale, almost limpid and slightly acid, opalescent fluid. At this period the disease may terminate, or make no farther progress, as if this elimination was similar to the perspiration of intermittent fever, the whole ailment vanishing at this stage. If the vomiting continues and passes on to black vomit, it becomes first streaked with dark flocculi of altered blood; the reaction, in many cases, changes from the acid to the alkalin, and careful chemic examinations have convinced me that this change in the reaction of the black vomit was due to the elimination by the gastric mucous membrane of urea, and its conversion into ammonia.

The acid reaction of the yellow fever vomit is due not to the presence of any peculiar acid, but to several, as the phosphoric acid, existing in the form of acid phosphates, acetic and hydrochloric acids. The degree of the acidity will also vary with the character of the fluids and solids taken into the stomach; thus, if much sugar be taken, the vomited matters will be much more strongly acid, and the presence of this substance will also determine, to a great extent, the presence and development of certain fungi, as the yeast plant.

The rapid generation of torulæ, as well as the effervescence of the black vomit, in certain cases, is referable chiefly to the presence of sugar in the aliment, and in the tea and coffee drank.

I have observed various forms of coniomycetous fungi in the black vomit of yellow fever, but I have by parallel experiments, and microscopic examinations of urine and various other organic liquids, failed to find any distinct species characteristic of yellow fever. If the black vomit be allowed to stand for days and weeks, and be carefully examined at intervals with the microscope, we see various forms of the coniomycetous fungi, as torula, sacchari or cerevisiæ, cryptococcus, and penicillium glaucum; and of the hyphomycetous fungi, as oidium lactis, and oidium albicans; and of the physomycetous fungi (mucor); and of the torulaci. Upon one occasion, during these investigations, I submitted one of these fungi from the black vomit of yellow fever to the observation of an excellent microscopist of this city, Mr. Kinttschmitt, and the following is his reply:

NEW ORLEANS, Nov. 10, 1873.

My Dear Sir:—I have subjected the filtrate from black vomit, which you recently placed at my disposal, to a very careful microscopic examination and comparison with other fungoid growths, of which I have several prepared slides in my possession.

The fungoid growth developing in the filtrate of black vomit has certain points in common with torula, oidium and mucor, and if torula be a submerged form of penicillium, also to the latter fungus; it also resembles the filamentous development of bacteria, the same as the fungoid growths developing in a solution of gamboge. The diagram which Virchow furnishes of the aspergillus fungus discovered by him in the human lung, has a strong likeness to the black vomit fungus.

There is a doubt, however, in my mind, that yellow fever is not produced by a specific fungus; but the fungus, if produced in the human body at all, is produced by the sickness itself; but it is most likely that the fungoid growth only makes its appearance after the vomit has been ejected from the stomach.

The slides on which the foregoing remarks are based, had been prepared on 2d inst. On examining them again yester-

day, the fungus has in a measure disappeared, and granular masses seem to have taken its place. I remain, my dear sir, very respectfully, P. KINTTSCHMITT.

The specific gravity of black vomit, as determined by weighing, with the specific gravity bottled, varies from near the standard of distilled water to near that of blood.

It is now fully admitted that black vomit is not entirely confined to yellow fever, and that it is chiefly the secretion of the mucous membrane of the stomach, and the matters introduced from without as food, mingled with the blood which oozes slowly into this viscus, from the mucous surfaces denuded of mucous epithelium.

But in most cases, black vomit is something more; it is to a certain extent an excrementitious product, containing urea and carbonate of ammonia.

The kidneys are more or less affected in every case of yellow fever; when they act continuously and freely, the blood is freed of bile and urea, and black vomit more rarely occurs than in those cases in which their functions are arrested, and the mucous membrane of the stomach assumes the excretory function.

Black vomit is due to several causes:

1. To the direct irritation and structural alteration of the gastric mucous membrane, by the poison of yellow fever. This poison is most probably received into the blood and acts in this manner, or through this medium upon the gastric mucous membrane, for we find cotemporaneous changes taking place in the heart, liver and kidneys; and these changes would most probably succeed the gastric irritation, if the poison was received in food or drink, primarily by the stomach.

2. To the structural alterations of the blood, and especially to the marked diminution of the fibrinous element, which appears to sink to a lower figure than in any other known diseased state. It is well known that the diminution of the fibrinous element, below a certain standard of health, so deranges the capillary circulation as to lead to congestion, alteration of nutrition and secretion, and passive hemorrhages. The hemorrhages and effusions of scurvy can only be referred, with reason, to the changes of the blood, and especially of the fibrin.

3. To suppression of the action of the kidneys, and retention in the blood of urea and other excrementitious products, and the elimination of urea, and carbonate of ammonia and ammonia, by the gastro-intestinal mucous membrane.

4. To the direct irritant action of the ammonia, and excrementitious materials eliminated vicariously, upon the mucous membrane of the stomach and intestines.

Bernard and Frerichs long since explained, by experiments, what we observe in those cases of yellow fever attended with urinary suppression. Thus the former experimenter found that a dog, which had a fistulous opening in the stomach, passed daily with his urine about 93 grains of urea and uric acid, and yet during the succeeding twenty-four hours after the removal of the kidneys, the blood drawn from this animal exhibited only a mere trace of these constituents, but urea in abundance was detected in the gastric juice withdrawn through the fistula; and after remaining for some time in the stomach and intestine, the urea changed into ammoniacal salts, and the gastric juice was secreted continuously and not, as in the normal condition, only after a meal. Not only were the manner of formation and chemic constitution of the secretion of gastric juice altered by this vicarious excretion of the main constituent of the urine, but the mucous membrane was structurally altered, and became disqualified not only for the performance of this eliminative action, but also for the elaboration of its normal secretion.

In yellow fever, the suppression of the action of the kidneys follows immediately after, or may even begin in the midst of a devastating fever, attended with repeated alteration and chemic change of the elements of the blood, and the formation of large amounts of urea and other excrementitious matters, and the work suddenly thrown upon the already weakened and altered stomach is far greater than when the kidneys are amputated in a healthy dog, or when their sudden suppression is from the action of cold. Bidder and Schmidt have shown that the digestive powers of the gastric juice are weakened, if it be mixed with any considerable quantity of saliva, in consequence, as they suppose, of the neutralization of the free acid by the alkali of the saliva; and they also found that the addition of bile to the normal gastric juice entirely suspended its digestive property, although the mixture still exhibited an acid reaction. Bernard, Bidder and Schmidt found that gastric juice, secreted with urea, sooner or later not only became alkalin, but also lost its power of converting albuminous matters into assimilable forms; and Lehman also found that the digestive power of the gastric juice was much impaired by the addition of alkalin salts, or by saturating the fluid with peptones or other organic substances, either nitrogenous or non-nitrogenous.

In yellow fever, when there is an impairment or suppression of the function of the kidneys, we not only have a combination of these various causes, producing derangement of the gastric juice, but we also have the destruction of the fibrin of the blood, inducing passive hemorrhages from the congested and altered gastric mucous membrane, and at the same time such an elevation of temperature as is most favorable to the rapid decomposition of the contents of the enfeebled stomach and intestines.

5. To the irritant and nauseating effects of the bile retained in the blood. The bile retained in the blood, without doubt produces its characteristic effects upon the nerves supplying the stomach, producing nausea and vomiting.

6. To the degeneration of the excretory and secretory cells of the gastro-intestinal mucous membrane, attended with or characterized by the deposit of granular fibroid or albuminous matters and oil globules in the secreting cells, and in the walls of the smaller blood vessels or capillaries.

7. To the capillary congestion of the gastro-intestinal mucous membrane, similar in all respects to the intense capillary congestion which characterizes all the organs and tissues in this fever.

The chief causes of black vomit therefore are: the direct irritation of the gastric mucous membrane; intense capillary congestion, in consequence of the morbific action of the poison of yellow fever, and its products, upon the vasomotor system of nerves; suppression of the functions of the liver and kidneys, and the retention in the blood of bile and urea, and the elimination of urea from the gastro-mucous membrane, as such, and in the state of ammonia and carbonate of ammonia; and the direct irritant and sol-

vent effects of ammonia and carbonate of ammonia, upon the gastro-intestinal mucous membrane and the effects of the urea, ammonia, and other constituents of the metamorphosis of the tissues upon the blood; the alterations of this fluid by the changes excited by the yellow fever poison, and the destruction and alteration of the fibrinous element.

When careful sections of the kidneys were made with Valentin's knife and examined under the microscope, the Malpighian corpuscles and tubuli uriniferi were filled with oil globules and granular fibroid matters, which appeared to be modifications of fibrin and albumin. The excretory cells of the kidneys also contained oil globules and granular matter.

The poison of yellow fever appears to act in an analogous manner to the agent producing smallpox, or the poison of certain reptiles, which alter the constitution of the blood, and lead to the formation of altered albuminous and fibrinous products from the blood; and which in the case of yellow fever transude into the hepatic ducts and urinary tubes, and thus cause suppression of the urinary and biliary secretions.

When in any case of yellow fever the function of the kidneys is arrested, a fatal result necessarily ensues, not only from the retention of the urinary constituents, but also from the retention of the bile.

As long as the kidneys perform their normal function, the retained bile will be continuously eliminated; but as soon as these organs cease to act, the bile, as well as the urinary excretion, is retained in the blood, and certain nervous disturbances are induced, as dullness of the intellect, uremic convulsions, and in some cases violent agitation of the muscles resembling tetanic spasms.

Black vomit, therefore, is an *effect* or *result* of preceding actions or changes, and is not a cause; it is an error therefore to search, either by chemic means or by the microscope for the *cause* of the disease in one of its *products*.

Black vomit, from its great amount, may be one of the causes of death; but as it is, in many cases at least, the result of an effort on the part of the living organism to eliminate certain materials from the blood, it may be to a certain extent salutary; but it is in all cases, only secondary to the preceding changes in the blood, heart, liver and kidneys.

In the preceding chapters we have given the practical results of the microscopic and chemic examinations of the black vomit in various stages of yellow fever; similar facts will also be presented in the succeeding chapter on the changes of the urine; the following cases are presented in this connection as direct demonstrations of the generalizations just recorded:

Case I.—Yellow fever, jaundice, suppression of urine, black vomit, death. G. G., age 22, laborer; native of Canada. Entered Charity Hospital Oct. 18, 1873. Attacked with yellow fever October 14. Has been driving a street car, and has resided on Napoleon Avenue near the Mississippi River, in one of the so-called infected districts. Has resided in New Orleans four years; states that his attack began with "universal pain all over the body," which was greatest in the forehead and lumbar region. Fever began with chilly sensations. October 18, evening; has just entered the hospital. This is the fourth day of the disease. Pulse 100; respiration 30; temperature of axilla 105.5 F. Tongue very red at tip and edges, and coated with yellow fur in the center. Conjunctiva yellow and congested. Surface of the entire body yellow, with marked capillary congestion. Gums red. No appetite. Body emits a disagreeable odor. Patient restless and nervous, and although answering questions slowly appears to be in an unnatural state. Complains of pains in all parts of his body.

October 19, 8 A.M., tongue very red at tip and edges and furred in center. Gums very red. Conjunctiva of eyes congested and yellow; body deeply jaundiced, with great peripheral capillary congestion. Eyes have a wild restless expression. Stools light colored. Patient has passed no urine and his bladder is not distended. Restless, uneasy, sleepless, with great mental hebetude and confusion. Pulse 90; respiration 26; temperature of axilla 103.10. 8 P.M., intellect confused and stupid; tongue red at tip and edges. Patient very restless, tries to get out of bed incessantly and says that he wishes to go home. Face expressive of sorrow and grief. No urine has been obtained during the night or day; complete suppression. Pulse 90; respiration 26; temperature of axilla 102. Black vomit runs from corners of the mouth and appears to regurgitate from the stomach without any effort on the part of the patient, who continued very restless during the night and died at 6:30 A.M., October 20. Black vomit continued to run out of his mouth up to the time of death.

Autopsy, at 9 A.M., October 20, three hours after death. Exterior of body still warm. The warmth was diffused over the entire body. Face and limbs full and round. Surface of skin greenish-yellow; dependent portions of neck, face, trunk and extremities mottled. Black vomit running in streams from both corners of the mouth. When the body was turned on its side in placing it on the table, a considerable amount of dark blood or black vomit poured out of the mouth. The ease which the black vomit poured out of the mouth indicated great relaxation of the muscular coats of the esophagus and stomach. Immediately after opening the thorax, I introduced the bulb of a delicate thermometer into the right ventricle of the heart, and found the temperature to be 100.5 F. It is not probable that any great degree of heat had been lost during the short period of time which had elapsed after death. Dependent portions of lungs congested, otherwise normal. Muscular structures of heart apparently greatly congested, giving the surface of the organ a deep color, as in malarial fever; but when the walls of the heart were cut through and the organ carefully washed under a stream of water the muscular structures presented the characteristic yellow color of yellow fever. Muscles of heart softened and readily crushed under the fingers. Under the microscope the muscular fibrillæ of the heart were found to contain numerous oil globules and much yellow granular matter; the oil and granular matter were, however, not so abundant as in cases in which death took place at a later stage. Cavities of heart distended with dark liquid blood; also a small golden-colored fibrous clot. Stomach distended with about one quart of dark, grumous, fluid black blood, or black vomit. Mucous membrane of stomach greatly congested and mottled, presenting deep purplish spots or ecchymoses, and from these portions the black vomit appears to have flowed from the congested and ruptured blood vessels. Small intestines contained blood.

The liver was congested, presenting a dark mottled appearance on the surface; many yellow lobuli, however, were readily discerned upon the surface, resembling in all respects the yellow color of the liver in yellow fever. The congestion of the capillaries of the liver was so great, however, that the organ presented more nearly the hue of some recent fatal cases of malarial fever. When thin sections of the liver were made, and the excess of blood gently pressed out and the slices washed under a stream of water, the color resembled in all respects that of yellow fever. Liver loaded with oil globules and yellow granular

matter. Liver cells contained oil globules and were of a distinct yellow color.

When the great excess of blood with which the kidneys were congested was washed away, these organs presented the usual color of yellow fever. Sections with Valentin's knife, viewed under the microscope revealed the Malpighian corpuscles and tubuli uriniferi, filled with detached cells, oil globules and yellow granular matter. The urinary bladder contained about two fluid ounces of urine, which represented the amount excreted during the last thirty-six hours of life. Detected no coloring matter of bile in urine. Acid reaction. Slightly turbid. Light yellow color. Urine contained albumin, urinary cells from excretory tubes and from pelvis of kidney, and casts of tubuli uriniferi. Examination of black vomit from the stomach. Reaction acid; contained numerous colored blood corpuscles, masses of hematin, oil globules, granular matter, cells from mucous membrane, casts of gastric glands, and broken capillaries. Sp. gr. 1016.7. Upon careful analysis, the black vomit contained urea and ammonia, acetic and hydrochloric acid. No hydrocyanic acid was present. The hydrochloric acid loses to a certain extent, for it could be driven off by heating the black vomit gently in a beaker on the sand bath, and its fumes reddened litmus blue, and decomposed nitrate of silver. When thrown upon a filter, the filtrate presented a brownish-red yellow color. Sp. gr. of filtrate of black vomit 1013.2. When the filtrate of the black vomit was treated with nitric acid the albumin coagulated, but the coagulum re-dissolved in boiling. I was unable to detect the biliary coloring matter in the filtrate of the black vomit. Alcohol added to the filtrate coagulated the albumin. Sp. gr. of black vomit 1016.7. Sp. gr. of filtrate from black vomit after removal of blood corpuscles and organized bodies 1013.2.

Solid residue in 1000 parts of black vomit . . . . . 56.15.
" " " " " filtrate from black vomit. 46.60.
Hematin, blood corpuscles and organized elements in 1000 parts of black vomit . . . . . 9.55.

When the filtered liquid from the black vomit was set aside, a delicate fungoid plant resembling the torula was developed. This delicate fungus had certain points in common with torula, oidium or mucor; and if torula be a form of penesedium, also to the latter fungus. It also resembles the filamentous development of bacteria. A similar fungus has been observed developing in gamboge.

(To be continued.)

PRE-COLUMBIAN LEPROSY.

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(Continued from page 626.)

Dr. Manuel A. Muniz, of Lima, Peru, in the *Cronica Medica* of 1886, contributes an article entitled, "La Lepra en el Peru." His notes were taken from the Historical Discourse on the Foundation and Rights of the Hospital San Lazaro, Lima, by Bravo de Lagunas, published in Lima, 1761. This work is in the library of Santiago de Chile. Dr. Lagunas shows the first royal ordinance for the care of lepers and for the foundation of a hospital was made in the time of Charles III. In 1693, the alms were ordered to be used for the support of a hospital for Indians. Finally, Philip II. prescribes that such sick persons as are afflicted with contagious diseases be carried to elevated localities, from which no defiled wind having passed the hospitals, can flow down and reach the healthy population of the lowlands.

Dr. Muniz mentions the first leper hospital at Lima, built by Anton Sanchez, a citizen of that place in 1563. In 1606, according to the same authority, Lima was full of lepers, and those unfortunate persons were too much for San Lazaro; they were admitted elsewhere, and many of them died unknown and without assistance, even without the sacrament. Fear was expressed lest the infection should spread over the whole country, and the successors of Sanchez took care that all lepers should be received in their enlarged hospitals, which consisted of three houses; one for men, one for women, one for negroes. All lepers to be received, unless they were slaves. As to the latter, their master was bound to take care of them during the first year. It is said that these masters used to evade this obligation, by antedating the outbreak of the disease. These buildings are to-day tenement houses, having outlived the terrible scourge against which they had been built. In 1639, the chronicler Cobo mentions the hospital San Lazaro, slightingly, saying that it was very poor, and little resorted to, which proves that the disease had already broken its wings. Bravo de Lagunas corrects the error of Echave, who states that San Lazaro was founded for negroes: "All free persons, suffering from San Lazaro's evil, whatever their social position, condition, sex or age, are received in it;" which shows, according to Dr. Muniz, how ill informed was the author of the book, entitled the "Star of Lima," (or Description Sacro-political of the Beauties of the City of Lima, published at Amberes in 1688), when he said that the hospital of San Lazaro was built for negroes, and also Melandez, who says that, failing patients of that color, the hospital would have been empty, if it had not been made into a common sick-house for the falling evil, because the south wind with the cold dryness of the Andes, loses its poisonous qualities, and rather subdues than corrupts the humors. Bravo de Lagunas gives a number of reasons, and quotes authorities to invalidate this testimony. From 1700 till October 1746, this leper hospital was financially successful. Then came the earthquake which destroyed Callao, and partly Lima, and not one stone of the leper hospital was left standing upon another. For over six years the lepers had to live in ill-made cabins or miserable huts. In 1758 the new leper hospital was inaugurated; the money for this purpose had been obtained by lottery. In 1822 the hospital of incurables and that of lepers, were made one. The old leper asylum was converted into a school, and afterward into barracks.

Lagunas tells us that physicians generally assume as a cause of leprosy in those countries, contrary humors which destroy the skin, and are much fostered by bad food, depraved constitution, hot air, uncleanness, slovenliness in places of habitation. "Others who believe in the vermicular system, see the cause of cutaneous diseases and pestilences in small insects, imperceptible gnats which penetrate into the body through the skin, assign this same cause to leprosy. These animalcules stick to the garments, walls and even stones. In this manner, they account for its contagious nature, the insects or seeds pass into other bodies from the air, or by contact with those

parts to which they are attached." Here we have then, the embryo of bacteriology in 1761!

I quote further from Lagunas: "A doctrine in which all eminent physicians agree, and which is also favored by the priests, is that scabies, psora and leprosy only differ in degree. Scabies consists in small pustules which disfigure the skin. In psora, a pernicious itch is added, and if these symptoms are aggravated or extend to the internal parts we have leprosy." Muniz says, however, that they carefully differentiated leprosy and the gallico.

An early law in Lima prescribed that parties of recently introduced negroes should be stopped at a distance of at least one league, before entering the city, and should remain in quarantine until the chapter had satisfied themselves that they were free from contagious diseases; and the city went to the trouble of building houses in the suburbs, on the banks of the river, where the quarantined people could temporarily stay, till they were sold and spread over the country. "It was the same theory of contagion," says Muniz, "which obliged all lepers to use no speech in asking alms, but to make use of bells and wooden timbrels." Evidently the negroes were suspected as a leper importing element.

In the middle of the last century, the leprosy of an illustrious prebendary of the Cathedral of Lima caused a famous litigation.

In 1761, Lagunas says, that "it has been observed in the hospital of San Lazaro, in Lima, that as far back as memory reaches, four persons have been in immediate attendance upon the patients, and never did any of them catch the disease. In this hospital there is now a young woman with furfuraceous leprosy, two patients covered with purulent tumors and who scarcely present human shape, and several others just as wretched, though with smaller deformity. There are others with feet and legs full of scabs, and almost as thick as the body, who in every other respect seem to be well, and have done for many years such services as they were able to perform. There are some whose articulations have given way, or whose fingers have fallen off, and there is another whose foot detached itself altogether, and who walks and stumps along like a trunk. There is a leper whose voice is so raucous, that it reminds you of the snarling of a dog, or of some other moaning animal."

Muniz quotes from Parra, "a Colombian physician, as unfortunate as he was intelligent," who suffered from the terrible effect of the disease, and described in eloquent and graphical pages its pains, its torments—(Ricardo Parra, of Bogota, Colombia; his work was entitled "La Lepra," and was published in 1850-1860): "The first notable Spaniard who caught leprosy, was one of the conquerors, Gonzalo Jimenes de Quesada; he died of it. There is no doubt that he contracted the disease through contagion, and that therefore leprosy must have been here before the Conquest. In America its resort of predilection was ancient Colombia; it never gained much of a foothold in Peru."

I shall quote Parra at some length to give a clear idea of his etiologic theory: "Elephantiasis is a radical and constitutional asthenia, which tends toward partial gangrene. It is not only a nervous asthenia; it is asthenia of all the elements, organs and functions." Parra nearly forty years ago had an intuition of the microbe. "I shall show," says he, "how an impression, whatever its origin, whether from cosmos or microcosmos, from the external world or from the organism itself; how such an impression working on a sensitive nerve interferes fatally with a nervous center; how this nervous center by means of an exodic fiber and of a special nerve apparatus, the vasomotors, acts upon the vascular system, contractible in all its extent; how this reflex action hurts and disturbs that system, causing a beginning of paralysis of atonia and weakness in the play of its power of contraction; how these vessels ceasing to act normally, interfere with the blood circulation, and every kind of circulation; how the impediment in the way of the general circulation, checking the free exchange between blood and tissues, and the free contact between the tissues, and all the fluids and humors of the economy, produces principally three things: anemia and asthenia of the nervous centers, anemia and mortification of the tissues, alteration of the composition and even constitution of the blood, and perversion and depravation of all the humors, liquid products, and all the secretions of the organs; how these causes interfere with all the functions of nutrition; how this disease of nutrition in all its functions aggravates and increases the central enervation; how this enervation, already deep-seated, and the perturbations of nutrition, produce general dyscrasia of the humors; and how all these causes together, working and acting, one upon the other, being at the same time causes and effects, engender and produce thousands of abnormal phenomena, which, united with them, in masses, every day increasing with growing and irresistible action, produce successively progressive mortification, slow disorganization, increasing paralysis, and lead finally to extensive phagedena and general gangrene."

Here is another quotation from Parra: "The wrinkles, fissures and scabrosities, the fall of the hair, the desquamation, the general debility, the consumption of the muscle between the index and the thumb, the cold, the atrophy of various parts, but especially that of the vertebral column, must be the immediate effects of the disturbance of nutrition in all its functions, interfered with by the constriction of the terminal extremity of the arteries and capillaries. The turgid countenance, the livid, bluish, ashy or purple color of the face in one form of the disease, and the discoloration of the scalp, the formication and numbness, which are symptoms of myelitis, in the other form; the feeble pulse, slow and heavy, which seems to beat through mud; the inflated, very voluminous veins—all these symptoms of either form must be the natural result of the disturbance of circulation, combined with the disturbance of hematosis and nutrition, cyanosis, black blood, fluid and fibrinless, bluish veins under the tongue, a thick and infiltrated skin, infiltrations of the cellular tissue, edema in various parts, infiltration of the corion, glandular inflation, diseased condition of all the glandulæ, disorders of menstruation, epistaxis, at times frequent, affection of all the mucous membranes, are in tuberculous lepra the result of the combinations of the lesions of blood circulation; and all kinds of circulation, of respiration, hematosis and nutrition. And the nutrition perverted and working with a damaged and atonic circulation and corrupt sanguinification, added to cyanosis and swelling of the face and other parts, and to the capricious changes of color, will give us the swelling of the lingual veins, the miliary granulations, the spots, the warts, the tubercles and a

thousand other morbid products; and finally the simultaneous affection of these three functions, added to the lesions of sensibility and motility . . . will give us in combination, the curvature of the fingers, the disarticulations, the muscular debility, the numbness, the lancinating pains, the vague pains, arthritic, vertebral, and finally, the osteocopic pains, and all the pains in their terrible reality; they will give us the vacillating gait, the contracted hand, the crook-legged walking, the spinal curvature; and in another combination they will give us the jumentous urine, the cottonous skin, the forehead bacon-rubbed, exaggerated or malodorous sweat, and the absolute cessation of transpiration, the abscesses and furuncles, the spots of all size by vascular relaxation, the knots and horny spots, the tubercles and ulcers; and in another combination of the same form, all these functions (*danadas*), will give us dyspnea and suffocation, palpitations of the heart, the constriction as with a girdle, the precordial oppression, terrible nightmares, satyriasis, and violent hunger, the thirst and the hydrophobia, the blindness and the photophobia, the libido-inexplebilis, and the motiveless rage, the general despondency and unspeakable torment. And all this in consequence of primitive lesions of the circulation and innervation. All this in consequence of the loss of vital energy effected (*herida*) in the nerves, and effected in the blood, effected through the want of oxygen and effected through the want of nervous influx."

I shall give also Parra's description of a leper hospital; it will show the character of leprosy in ancient Peru and Colombia, and the mutilations which Muniz seems to find represented in the *huacos* pottery:

. . . "in some, the muscles have become pale, weak and are slowly destroyed; in those who follow, the articulations are scooped and excavated, in another the articulation of a foot is detaching itself, in the next the hand is already detached . . . one entirely shorn of muscles and arms, has nothing left but a putrid trunk; but death disdains the mutilated trunk, and these wretches just as they are, feed with voracity, digest well, rave and blaspheme, and burning with lascivious fury, get libidinously drunk, and revel in shameful dreams and filthy fancies. . . . Look, finally, at that hundred of monstrous beings, mixed up together, piled up one on top of the other, and wallowing in the dust. Many have no noses, nor lips, nor ears, nor hair; where the face used to be you see now three or four holes. . . . The amygdals have fallen, and they can no longer croak; their noses are stopped and they can no longer breathe through them; larynx, pharynx, esophagus have been devoured, and they can not swallow; some are mad with hunger, others devoured by unquenchable thirst. Here are some in whom the raucous roar of the lion has turned to Catilinarian voice and perfect aphonia. In another subject the lungs charged with purulent foci can hardly expand, and here is another whose heart has almost stopped beating. Some weep, others curse, others blaspheme. Others, pusillanimous and craven, tremble and cry for mercy at the least provocation; others laugh danger to scorn, and careless whatever may happen to them, die with stoical indifference. Unceasingly flowing tears and a viscous glutinous humor keeps their red and inflamed eyelids apart, so that many lie blind or grope blindly in the darkness. Many of them have frightful dreams and awake roaring like lions or howling like wolves. The urine of all these men is thick (jumentous) like that of the horse, or clear and raw, as if passed through a filthy filter; there are no sewers more mephitic than their defecations. Some of them lie motionless and entirely paralyzed, and as, at the same time they can neither articulate nor swallow, they are dying of hunger and parched with thirst, not being able to ask for help. All secrete a fetid sanies over the whole body, and breathe an air which they themselves have poisoned. . . . A horrible caries consumes all the articulations and causes the severance of the limbs, which fall off by pieces, the phalanges of the fingers are shaken off and the teeth break forth from their sockets. . . . Some of these trunks talk; demented, mad, they try to sing in their delirium, and their voice is now like the hissing of a snake, and now like the cavernous echo of a tomb. Look, now, at that horrible scene; some of these trunks, formerly men, now masses of rotten flesh, are possessed by libido-inexplebilis, and would like to indulge in pederasty and onanism with other not mutilated wretches, who having fallen into the opposite depravity, feel a horror for the sex, and all that refers to it; but who, devoured by insatiable hunger would like to eat their rotten arms."

Ulloa, in 1797, says: "Leprosy is rather frequent in hot climates; it is unknown in Peruvian highlands. The chief cause of the disease in Peruvian America has been the introduction of African negroes. Muniz mentions that Fray José de la Trinidad took charge in 1822 of the leper hospital which had been united with the incurables, in Lima, and was called del Refugio. With the exception of 1853, when nine persons succumbed to the disease, the average mortality from it was from two to six a year. The "long-bearded and small-cloaked father," as he was called, died in 1878. It is impossible, according to Muniz, to make a reliable statistic record of leprosy in Peru; the registers are few and insufficient. The decrease of the number of cases is a fact. Leprosy has been very hard on the black race. Almost all the ancient inmates were emancipated negroes. The disease affects Indians rarely. From 1870 to 1886, there died in the Refugio five men and five women; four of them Chinese.

Now considering that leprosy has become almost universal in Colombia, and that it has been almost extinguished in Peru, we are led to suppose that in the latter country great care was taken to isolate the lepers; for in no other way could that disease be extinguished. Therefore leprosy must have been rampant there. Such perfect isolation could only result from a great horror of the disease. And if such horror existed, would they be likely to bury with their dead the images of the horrible disease? It may be asserted that the influence of the Church isolated the lepers, so that no feeling of horror is necessary to explain their isolation. But the Incas never were under the influence of the Church, and the Church establishment existed in Colombia to as great an extent as in Peru.

I am inclined to believe that if these *huacos* potteries really represent disease manifestations, they must be of the syphilitic kind. To succumb to syphilis was to be the victim of a disease which was not at the disposition of the poor, who could not pay for the use of many women; and that use was considered as the cause of the disease. They had not in those ancient times any idea that a bacillus

must be the cause of the disturbance. Therefore to be buried as a syphilitic would probably be an honor, rather than otherwise, in the eyes of the general people, while to be buried as a leper would be quite a different affair. Hence we may conclude that if certain deformities are found in ancient burial places, it is more probable, at any rate, that they belong to syphilis rather than to leprosy.

In Saladoa, ancient Arizona, considerable pathologic evidence was found by Mr. Frank Hamilton Cushing of abscess of the lower jaw and perforation of the alveolar walls. In one case, part of the alveolus was lacking, giving to the jaw a very distorted appearance. Now these Saladoans have been considered by many archæologists as allied to the Peruvians and the mound-builders of the Mississippi valley on account of their Inca bones. Such a deformation would be very similar to what we see in some specimens of *huacos* pottery; and it could be only syphilis, as leprosy has never any effect on the skull. The man could not distort the soft tissues of his jaw; the disease must be in the bone.

Mr. Bandelier, the explorer who sent to New York the *huacos* pottery which I have examined, has his headquarters on the Sacred Island of Lake Titicaca, 13,000 feet above the sea level. It was from this island that the original Inca descended to conquer and civilize the barbarous tribes of South America, and to found their capital, Cuzco, four centuries before the arrival of Pizarro, 1000 A. D. Now on these highlands syphilis had existed among the Aymaras and Quechuas many hundred years before the arrival of the Spaniards. Whatever evil these Incas brought along with them, was likely, according to all I have said before, to be syphilis.

In ancient Arizona, Mr. Frank Hamilton Cushing found some burial places which he calls extra-muros cemeteries, and he thinks they were for some kind of outcast people. It would be natural, especially for such persons who know something of the history of leprosy in Europe, to suspect that these places were leprous burial grounds. But he informs me that his examination of many hundred skeletons in the southwestern United States revealed no traces of leprosy among the prehistoric population of America. The importance of this statement consists in the special relationship more than plausibly supposed to have existed between ancient Peru and Arizona. One of the causes of this plausibility is the presence of llama, guanaco and vicuna representations in clays and in petrographs buried with the dead. That animal is supposed to have been extinct (by Mr. Bandelier) long previous to the sixteenth century. Another is the presence of *bolas* or sling stones, such as are now used in South America in the chase; the tombs furnished only the stones, the sling is only to be found in pictorial form. There are also the knotted cords found in sacrificial caves in the mountains surrounding Salado City, which resemble closely the *quipus* or sacred records of the Incas; these knots are the hieroglyphs, or the alphabet of those ancient tribes. There is, above all, the predominance among the Arizonians of the Inca bone.

Mr. Cushing states that he did not find in Los Muertos, one of these places of interment, either hair or cerements or anything that could have escaped destruction for a thousand years; he very naturally concludes from one thousand to two thousand years at least must have elapsed since those corpses were buried there.

The absence of any evidence of leprosy in Arizona will make the existence of the disease in pre-Columbian Peru very improbable.

(To be continued.)

SOCIETY PROCEEDINGS.

Medical Association of Georgia.

Forty-sixth Annual Meeting, held in Savannah, April 17, 18 and 19, 1895.

FIRST DAY—MORNING SESSION.

The Association convened at the Armory Hall at 10 A.M., and was called to order by the PRESIDENT, DR. WILLIS F. WESTMORELAND, of Atlanta.

Prayer was offered by the REV. DR. DRIPPS of the Independent Presbyterian Church.

Addresses of Welcome were delivered by MAYOR HERMAN MYERS and MR. J. F. B. BECKWITH, and DR. FRANK M. RIDLEY, of LaGrange, responded on behalf of the Association.

PRESIDENT WESTMORELAND then delivered his

ANNUAL ADDRESS

in which he said the Association was nearly half a century old, only a few of the original members remained with us, and each year we noticed that a loved face was absent and learned that an honored friend had passed from our midst to return no more. Within the lifetime of the Association, the history of medicine has been revised, the better part of surgery written, and every subject pertaining to medicine had widened out under the influence of broader ideas and the greater diffusion of knowledge—empiricism in medicine and surgery had almost disappeared, and that period when a great man's ideas, whether correct or not, was the standard he and his followers had for a guide, had passed away. Under modernizing influences scientific methods of research were carried out by trained observers in well-equipped laboratories in every civilized country, and under these careful and patient investigations the misty surroundings of the causation of disease had begun to clear. Medicine in its wonderful progress had outgrown the individual capacity of any one and had resulted in an elaborate division of labor and the permanent and beneficial establishment of specialism; able men by using their talent and genius along special lines, by their co-operative work had established the solid basis of the medicine and surgery of to-day. The specialists had to bear the brunt of a great deal of unjust criticism. In certain communities they had been censured as a class, when the blame was only merited by individuals. Unfortunately, there were medical men who used the broad cloak of specialism to cover the most outrageous charlatanism, and in this respect the field of gynecology presented more rank growths than any other.

A few years before the organization of the Association, in the upper portion of the State, there resided a country physician, a representative of that class of honest earnest workers, who from the vicissitudes of fortune had plucked the courage to endure and the inspiration to strive; a man surrounded by pains, care and anxiety; a man who ever proved a friend, comrade, counsellor and guide. This physician was Dr. Crawford W. Long, of Jefferson, Georgia, who by his discovery of anesthesia and his successful use of ether in an operation on March 30, 1842, revolutionized surgery and started it upon its most progressive era.

On motion, the Association adjourned to meet in the dancing hall of the De Soto Hotel at 2:30 P.M.

AFTERNOON SESSION.

DR. T. E. MITCHELL, of Columbus, contributed a paper entitled

TRAUMATIC WOUNDS OF THE EYE AND THEIR TREATMENT,

which was read by DR. A. W. CALHOUN, in the absence of the author. For convenience of description, the author divided wounds of the eye into incised, punctured, lacerated, and contused wounds. Another classification would be into aseptic and septic wounds. So, likewise, we may have a simple, compound, or complicated wound. Simple, when the agent producing the wound and any other foreign substance carried by it into the rent is removed, and complicated when any foreign body, whether the missile inflicting

the wound or material carried by it remains in the injured member. The fundamental principles laid down for treatment of wounds in other parts of the body hold good here: 1, the arrest of hemorrhage. This will rarely be found troublesome; 2, mitigate any existing shock; 3, cleanse the wound of every vestige of foreign matter; 4, render the wound absolutely aseptic by thorough irrigation with an antiseptic solution—corrosive sublimate 1-2000-5000; 5 coaptation of the severed parts by sutures, if necessary; 6, antiseptic dressing; and 7, position and rest. The latter we accomplish with atropia or scopolamin, 2-5 grains to 1 ounce of water, and a light pressure bandage to control the movements of the lids. The author then referred to wounds of individual parts of the eye. Wounds of the conjunctiva alone are generally caused by some corroding agent, as acids or alkalies, and offer a favorable or unfavorable prognosis depending entirely on the extent of corneal involvement. Superficial wounds of the cornea are among the most frequent of accidents, and are caused by the deposition in its structure of small pieces of steel, emery, grains of sand, cinders from a railroad locomotive, etc.

As to those cases in which enucleation is indicated, no definite rule can be formulated, since the intelligence, occupation and situation of the patient from the surgeon must be taken into consideration. The object of excision is to remove the peril of sympathetic inflammation. It is fortunate that sympathetic irritation usually precedes sympathetic inflammation, and serves as a signal for immediate enucleation. A wound involving the integrity of the zone of danger, or one in which a foreign body remains in the eye, is the most prolific cause of sympathetic disturbances. The consensus of opinion of the best authorities is in accord with the observations of Deutschmann that sympathetic ophthalmitis is of bacterial origin, the microorganisms traveling by continuity of surface beneath the optic nerve sheath, by way of the optic chiasm from the offending eye to the sympathizing member.

The prognosis of sympathetic inflammation is very grave. The surgeon should not fail to so inform the patient, and if an attempt be made to save the offending eye it should be done only after a thorough understanding of the risk assumed as to sympathetic involvement. As a substitute for excision, evisceration and optico-ciliary neurotomy has been advocated and practiced by some; but the consensus of professional opinion still adheres to enucleation as the safest line of procedure.

Dr. Louis H. Jones, of Atlanta, then read a paper entitled

URANALYSIS.

The author said that the rapid strides made in physiologic chemistry, and the more general use of the microscope, afforded us means for determining the composition of the urine with great accuracy, and a minimum amount of labor. No greater mistake can be made than to assume that the condition of the urine is an index to the state of the kidneys alone. Disorders of the brain, the liver, the heart, the stomach, alike tell their tale in altered conditions of the urine. The author discussed only the most reliable and simple methods of detecting such changes, and pointed out a few of the sources of error present in some of the methods in common use. There are, in making an examination of the urine, four points *usually* determined—namely, reaction, specific gravity, and the presence or absence of albumin and sugar. To these should always be added a knowledge of the amount passed in twenty-four hours, and the quantity of urea present, and where there is reason to suspect disease, or where the chemic analysis indicates it, the microscope should always complete the work. The reaction can be readily determined by means of litmus paper, the only point worthy of consideration being, in the event of an alkalin reaction, to know whether this represents the state of the blood, or whether it is due to fermentative changes, by means of which the urea has been split up with the formation of ammonium carbonate. Should this be the cause of an alkalin reaction, the litmus paper will regain its red color upon drying and warming. The urinometers in common use the author had found to be exceedingly unreliable, different instruments giving, with the same specimen, variations ranging from two to six points. The chemic tests generally made of the urine are a reproach alike to the chemist and the physician. What is to be desired are tests which are reliable under all ordinary conditions, which can be made without the consumption of too much time, and which require a minimum amount of skill for their proper performance. For the detection of albumin and for routine work, the essayist is partial to the ferrocyanide test, to the exclusion of all others. It has to commend it, both simplicity and reliability. It is made by adding to, say, eight grams of urine, about six grams of a solution of potassium ferrocyanide (strength 1-20), and then adding one gram of acetic acid, when, if albumin be present, a distinct cloudiness will appear throughout the mixture.

The author called attention to the fact that often much unnecessary confusion is brought about by speaking of the percentage of albumin found in a given specimen of urine. As a matter of fact, the actual *weight percentage* of albumin present in urine never exceeds 3 to 4 per cent., and rarely exceeds 1 per cent., and yet it is common to hear of urines containing from 50 to 75 per cent. of albumin, reference being had to the bulk of the precipitate formed, usually with heat and nitric acid. This must necessarily depend much upon the time allowed for settling, and is wholly inaccurate and unscientific. The author then referred to the various methods for detecting sugar in the urine. In closing, he called attention to the centrifugal method of obtaining urinary sediment for microscopic examination. By means of a small electric motor, carrying two arms with tubes attached, and which can be run by a small battery, the urinary sediment may be obtained in a few minutes.

Dr. A. W. Calhoun, of Atlanta, read a paper entitled

THE MANAGEMENT OF HEMORRHAGE AFTER TONSIL OPERATIONS.

The frequency of alarmingly profuse hemorrhage after tonsil operations, with an occasionally fatal result, makes this a subject of exceeding interest to the surgeon. Such accidents should not, however, stand as obstacles in the way of performing these operations, for the necessity for them is both frequent and urgent. Especially in children is the enlarged or hypertrophied tonsil often met with, and the evil effects of the disease are so apparent to the medical and even non-medical observer, that it often calls for prompt action on the part of the physician. The ordinary hemorrhage following the operation is of but small consequence, as with a little patience and care the blood soon ceases to flow of its own accord; or, if need be, a gargle of cold salt water suffices to arrest it in the course of a few minutes. But when there flows from the cut surfaces a steady stream of blood continuing for hours, then it is that the tact and nerve and skill of the surgeon display themselves to the greatest advantage. With an experience of nearly four thousand tonsil operations, the author had seen but few cases of alarming hemorrhage in children. Young children are not very liable to dangerous hemorrhage, but it is in the adult that the great danger lies. The actual cautery applied directly to the bleeding surface, the author could not suggest; but he could recommend pressure directly applied to the wound, which is the most satisfactory of all means. Pass the forefinger, the end of which is covered with a piece of moistened sponge or absorbent cotton, into the mouth and carefully cover the cut surface, and with the wound between the forefinger of the one hand and the palm of the other hand placed externally, exercise gentle but steady pressure. The hemorrhage ceases immediately, but recurs upon the removal of the pressure. It is now a matter of courage and confidence on the part of the patient and of physical endurance on the part of the doctor. In most cases pressure continued for ten minutes to one or two hours suffices to permanently arrest the hemorrhage, but in rare instances it must be continued through twelve to twenty-four hours. In these last cases assistance must be called in, so that the persons exercising the pressure can be rested at intervals of half an hour. Dr. Calhoun has never known this mode of checking hemorrhage to fail, and he recommends it to any practitioner having such a case.

Dr. R. J. Nunn, of Savannah, read a paper with the following caption:

SOMETHING NEW IN THE TREATMENT OF WOMEN AFTER CONFINEMENT.

It is well known that women living in a condition most nearly approaching to a state of nature do not require the "days of lying up" after confinement, nor do they keep them, as do the more civilized races, or the cultivated classes of society. The subject of the paper was a multipara who, after the birth of her first child, had suffered with prolapsus accompanied with cysto- and rectocele, continual backache, was generally puny, miserable and run down, at best a small weakly woman, but withal a most determined character, as will be seen later. One Sunday morning the patient was delivered and immediately expressed her determination of going to her work on the next day. No persuasion could change her resolution. Being a widow, she declared it to be a question of bread for herself and her children. Under

these circumstances it was determined to adopt the following method of treatment: twice daily the patient was to use a douche of a warm solution of boracic acid, immediately after which she was to report at Dr. Nunn's office. Here the uterus would be thoroughly cleaned out with aseptic water, and swabbed out with camphenodin (camphor, iodin and carbolic acid), the faradic current used with a vaginal electrode, a tampon applied, and an abdominal bandage was to be constantly worn. The treatment was carried out for about two weeks, after which it was gradually discontinued, and in about a month the patient was discharged apparently cured, not having had a single antoward symptom and declaring that her recovery had been better than after her first confinement, when she kept her bed ten days. Since this course of treatment, which is now several months ago, she has been continually at her work, not having missed a day. She enjoys better health than for years before and considers herself cured of her prolapsus.

As a guide to any one desiring to make further trial of this method of treatment, the author recapitulated the principles upon which it is founded: 1, thorough antisepsis; 2, effective internal and external support; 3, local stimulation to hasten involution of the uterus and the return of other overstrained parts to their normal condition; and 4, where necessary, the use of such appropriate general medication as may be indicated.

SECOND DAY—MORNING SESSION.

The first paper read at this session was by DR. DUNBAR ROY, of Atlanta, entitled

THE PROPER CARE OF SCHOOL CHILDREN'S EYES—THE NECESSITY.

The author summed up the main points of his paper, as follows:

1. That the hygiene of school children's eyes should receive as much attention as that of any other portion of the body.

2. That in many cases where there is seeming physical ailment and mental inaptitude such as headaches, dull feelings, inattention, loss of the power of concentration, the cause can be found in some ocular defect.

3. That as myopia or near-sightedness increases as the pupil advances to higher grades, such treatment should be instituted as will arrest the progress of that pathologic condition.

4. That teachers should be instructed by competent ophthalmologists as to the hygiene of the eyes and the various symptoms which indicate some ocular defect.

5. That every child should have his or her eyes examined before entering school, and if necessary a certificate should be given to that effect.

DR. FRANK M. RIDLEY, of La Grange, read a paper entitled

A DUTY OF THE STATE MEDICAL ASSOCIATION.

His remarks referred principally to the State Asylum, in which he said there had been dissatisfaction expressed as to the existing conditions and disappointment as to practical results. Most physicians were satisfied that inadequate legislative appropriations to a great extent lay at the bottom of these evils. According to the latest reports, there are at least 1,800 inmates in the asylum. So densely packed are these unfortunates that fresh applicants are frequently of necessity refused admission to the place, on the ground that it would be dangerous to allow the number of patients to increase. As a consequence, in a deplorable number of instances, filthy county jails, swarming with vermin and poorly furnished with beds and covering, are converted into temporary sanitariums for the treatment of the insane. Dr. Ridley urges that another scheme of investigation should be inaugurated, namely, let the Governor appoint a committee composed of seven of the ablest physicians to visit the asylum once a year, and not at stated times. Let them be clothed with full powers to make a searching sifting examination of every department from the kitchen to the superintendent's office Submit to His Excellency a carefully prepared report to be transmitted by him to the legislative body, suggesting such improvements in sanitation and general conditions as may seem to them to be urgent and feasible. Let them urge greater attention to the moral treatment of the inmates, as may be suggested by expert study and investigation of the best systems of Europe and America. This will require some outlay of money. Money thus spent is well spent, and should be met by the funds of the State Treasury. Dr. Ridley then referred to the inadequacy of the medical staff to perform the vast amount of professional labor assigned it. For the medical treatment of the 1,800 inmates referred to, suffering a score or more of nervous ailments, there are not exceeding 5 on the medical staff, a ratio of 600 patients to 1 physician, proportionally a greater charge on the physicians of the Georgia Insane Asylum than of any other similar institution, not only of the United States but of the world. Dr. Ridley, in closing, urged the Association to memorialize the Governor to co-operate with a committee from the Association, looking to the remediation of these conditions.

After a free discussion of this paper, the President appointed a committee of five to act upon the recommendations and suggestions contained therein.

DR. J. M. HULL, of Augusta, contributed a paper entitled "Graves' Disease, with Cases."

DR. W. S. ARMSTRONG, of Atlanta, followed with a paper entitled

REPORT OF SEVERAL INTERESTING OPERATIONS.

The first case was one of gastrostomy for impermeable stricture of the esophagus. The patient was 30 years of age and a printer by trade.

Case 2 was an interesting one, on account of the size of the stone removed from the bladder. In this case a supra-pubic operation was performed. The stone was of enormous size, elliptical in shape, flattened on two sides, and weighed at the time of removal thirteen and three-quarter ounces. Its greatest circumference was twelve inches, being larger by one-third than the stone removed by Dr. White, of Philadelphia, which has heretofore been regarded to be the largest stone successfully removed from a living person in the United States, without slough and without damaging the tissues. These stones compare as follows:

	Weight.	Circumference.
White's . . .	9½ ounces	8½ inches
Armstrong's .	13¾ ounces	12 inches, and 9¼ inches at right angles.

Patient recovered and now works on a farm.

Case 3 was one of operation for gun-shot wound of the abdomen.

DR. F. W. MCRAE, of Atlanta, read a paper entitled

APPENDICITIS—A BRIEF REVIEW OF MY PERSONAL EXPERIENCE,

in which he said that in every case where there is a sudden attack of abdominal pain, especially if there be nausea and fever, appendicitis should be suspected and carefully sought for. In many cases it can be excluded, but it is always important to bear in mind the possibility of appendicitis and make a diagnosis at the earliest possible moment. Even in the beginning there are signs which point to appendicitis with more or less certainty. One of the first signs that may be observed is limited movement of the abdominal muscles of the right side during respiration. The four cardinal symptoms as laid down by Dr. Murphy are sudden attack of pain over the appendix; always nausea, frequently vomiting; elevation of temperature; exaggerated local tenderness in various positions occupied by the appendix should always be borne in mind. Occasionally the pain and tenderness has become localized on the opposite side of the abdomen or in the epigastric region. In some cases it is referred especially to the bladder, and the only symptom complained of is pain in the bladder, and either difficulty in emptying it or frequent urination. In two of the cases which the author had operated upon, this symptom had been especially well marked. In the atypical cases of appendicitis a positive diagnosis is often difficult, sometimes impossible, prior to opening the abdominal cavity. Except in the fulminant cases, the treatment should be medical in the beginning. The bowels should be thoroughly purged, the diet regulated, counter-irritation or cold applied over the seat of pain and tenderness, and the progress of the attack watched carefully. Where the symptoms do not subside after careful purging, and local treatment is indicated, the case should be considered from a surgical standpoint, and where the pain and tenderness are increasing and the general symptoms becoming more and more marked an operation should be done without delay, where favorable conditions and a good surgeon are at hand. Since the last meeting, the author had seen in his own practice, and in consultation, nine patients suffering with appendicitis, and two of them having had each two attacks. He had also seen one patient, referred to him by the patient's physician, who had treated him through several attacks of recurrent appendicitis in the intervals between the attacks. Of these ten patients he had operated on four, and assisted Dr. Nicolson in one, making five cases that had come to operation. Of the five cases operated upon, three of his, and the one operated upon by Dr. Nicolson, recovered. One of the cases operated upon by himself was an old man, who died nine

weeks after the operation from exhaustion and paresis of the bowels. Dr. McRae then gave histories of these cases.

SECOND DAY—AFTERNOON SESSION.

DR. WM. O'DANIEL, of Bullards, read a paper (by title) entitled "The Hygiene of Prison Camps in Georgia."

DR. VIRGIL O. HARDON, of Atlanta, read a paper on

LAPAROTOMY DURING PREGNANCY.

It is comparatively seldom that the surgeon is called upon to open the abdomen of a woman who is normally pregnant. When conditions present themselves which would justify such a procedure in the non-pregnant woman, the existence of pregnancy offers a complication which leads us to consider seriously whether the interests of the patient would not be better served by postponing the operation until after confinement. There is always present a fear of interruption of the process of gestation involving a sacrifice of the life of the child in an effort to save that of the mother. Many cases therefore which would otherwise be legitimate subjects for abdominal section can no longer be so regarded when two lives are at stake instead of one. Urgent symptoms threatening one or the other of these lives constitute the sole indication for surgical interference under such circumstances. The altered conditions imposed upon the pelvic organs by pregnancy give a new and entirely different aspect to many diseases. The physiologic engorgement and the rapid structural changes which accompany pregnancy give to such diseases a different clinical history, and must be taken into consideration in discussing the prognosis and the treatment. The rapid development of tissue, most notably in the womb, but present also in other organs, extends to the new growths in these organs and causes rapidity of development of pathologic processes proportionate to the rapid development of normal tissue. This fact must always be borne in mind as a factor in the prognosis. Another question to be seriously considered in such cases is the effect which the diseased condition will have upon the development of the fetus in utero. Still another point to be considered is the effect which the operation itself will have upon the continuance of pregnancy. Experience has proved that operations for the removal of the ovaries and tubes and even pedunculated subperitoneal fibromas are not incompatible with the continuance of pregnancy. It has been shown that such operations not only do not produce miscarriage, but that they have no effect upon the subsequent development of the fetus. Probably the most frequent pathologic condition that we are called upon to consider in this connection is that of fibroma of the uterus. The technique of laparotomy upon the pregnant woman differs in no material respect from that of ordinary operations. Dr. Hardon then reported two interesting cases in which he had opened the abdomen during pregnancy.

DR. JAMES H. SHORTER, of Macon, read a paper on

PREVENTABLE BLINDNESS, ESPECIALLY AS RELATED TO SYMPATHETIC OPHTHALMIA, WITH REPORT OF SOME TYPICAL CASES.

The author stated that most writers and all text-books divide sympathetic affections of the eye into two classes—sympathetic irritation and sympathetic inflammation. Some observers hold that the conditions are two distinct phenomena; that sympathetic irritation is a functional trouble, a reflex phenomenon, brought about through the agency of the ciliary nerves; while sympathetic inflammation is an organic affection, a genuine irido-cyclitis from the start, set up probably by a transference of sepsis by way of the optic nerves. The fact that in sympathetic irritation so-called, the removal of the injured eye procures immediate and permanent relief from all symptoms of annoyance in the fellow eye; whereas in genuine sympathetic inflammation such operation exerts but little, if any, influence in arresting the course of the disease, adds much probability to the truth of this theory. The author then dwelt upon the symptoms of sympathetic ophthalmia.

The treatment of sympathetic inflammation is chiefly antiphlogistic; rest in bed in a dark room, hot applications, leeches, atropin, etc., but any and all treatment promises at best but little when once the affection has declared itself. Prophylactic treatment, on the other hand, is always infallible, and may be summed up in a few words—remove the injured eye, and to this may be added the further advice; do this in good time, at once if possible. The essayist briefly alluded to one case which from the sudden onset of the sympathetic inflammation, its destructive course in spite of early recognition of the condition and intelligent vigorous treatment resorted to, was a typical example and illustrated also the probable futility of all remedial efforts. The author laid down as an invariable rule that every eye made totally or partially blind by a penetrating wound, and especially if the globe remains tender to touch, should be removed without delay. Even if there be some reasonable amount of sight still left in the wounded eye, this is not a contra-indication for the operation, for it may be set down as almost a certainty that a severely injured eye in which attacks of inflammation recur will be sooner or later lost.

DR. WM. PERRIN NICOLSON, of Atlanta, made some remarks on

LIGATION OF THE EXTERNAL CAROTID ARTERY AS A PRELIMINARY TO AND COINCIDENT WITH OPERATIONS UPON THE JAWS.

He stated that in the history of ligation of arteries, the external carotid artery had stood for a long time as a vessel that could not be interfered with, but that Dr. Wyeth had concluded from his investigations on the subject that ligation of this vessel was feasible. Dr. Wyeth's work on surgery contains a full account and description of the normal anatomy of the vessel, its several variations, and the steps necessary to close it. The important feature about operations upon the external carotid is that in any trouble involving the external structures, in the face, about the mouth, etc., we can entirely cut off the circulation without interfering with the circulation in the brain, which has always caused a large mortality in the ligation of the common carotid. Some years ago, in an operation for removal of the upper jaw, Dr. Nicolson concluded to try the ligation of this vessel with a view to lessening hemorrhage at the time of the operation, and more especially in lessening the danger of return of the disease by a process of starvation, cutting off the blood supply from the seat of the growth. Since that time he had made the operation four times, always coincident with operations for the removal of the jaw, and more especially in connection with operations for malignant disease. He has no untoward circumstances connected with the four operations which he has made, and he feels certain that there is a wide field of usefulness ahead of this operation when it becomes more generally adopted, because the vessel is one which is easily reached and there can be no danger to the patient if the work is properly performed.

SCOPOLAMIN AS A MYDRIATIC IN COMPARISON WITH ATROPIN AND HOMATROPIN—A POSTSCRIPT TO A PREVIOUS PAPER.

This was the title of a paper contributed by DR. ARTHUR G. HOBBS, of Atlanta. Scopolamin hydrobromate has been demonstrated to have some superior qualities as a mydriatic: 1, in the small dose necessary; 2, in the few minutes required to produce complete paralysis of accommodation; and 3, in the comparatively short time of its continuance. The author had used it in his refraction room almost exclusively in cases where atropin was not particularly indicated. The strength of the solutions has varied from .5 to .12½ per cent., and in the latter weak solution he finds that a complete mydriasis is accomplished as effectually and it seems as rapidly as when the forty times stronger solution is instilled. While he has, as a rule, used a .2 to a .1 per cent. strength, he does not believe that in these stronger solutions the result has been either more certain or has been accomplished in a shorter time. By all the comparative tests the weaker solutions have given quite as good results as the stronger, and in both the results have appeared to be the same as when atropin or homatropin has been depended upon as the mydriatic. In the few cases of glaucoma in which he could risk so powerful a mydriatic, no increase of tension was manifested. He does not doubt that we will find the results of the 1-160 per cent. solution, which he is now testing, will prove effectual. If so, when it is remembered that we use only from four to six drops from the pipette, the great potency of this drug is almost without a parallel. The author is using it in iritis when atropin does not promptly dilate; also in some forms of keratitis with increased confidence.

SECOND DAY—AFTERNOON SESSION.

DR. J. C. LEHARDY, of Savannah, read a paper entitled "The Use of the Galvanic Current in Office Practice," in which he reported several interesting cases treated by this current with gratifying results.

REPORT OF A PART OF MY SURGICAL WORK FOR THE SIX MONTHS ENDING APRIL 15, WITH REMARKS.

This paper was read by DR. J. B. S. HOLMES, of Atlanta. The author reports fifty-one cases. In no case had an ovariotomy been performed simply for the relief of nervous or reflex symptoms. He had operated only for diseased conditions that he knew could only be relieved by surgical pro-

cedure, and careful examination, post-operative, had confirmed his opinion in every instance. While he believes in conservative measures, the most radical are often the most conservative. He is ready to admit that the abdominal cavity had often been ruthlessly invaded and organs removed that should not have been touched. They had been removed for nervous symptoms due entirely to other causes, and for which they were in nowise responsible. On the other hand, tinkering gynecology was responsible for many diseased tubes and ovaries that could only be cured by removal. The introduction of various caustic remedies into the uterus caused destruction and sloughing of the mucous membrane, with a cervical canal in many cases previously constricted and so rendered by the applications that the decomposing masses could not pass out. What follows? A septic endometritis, which soon extends to the tubes and ovaries, producing trouble that nothing but the knife will relieve. This must be resorted to or the poor woman is frequently doomed to permanent invalidism, condition sometimes worse than death. Many of the cases that the surgeon is censured for using the knife upon are caused by such treatment. He does not condemn all local treatment; when properly directed, he believes there are many conditions where it is not only admissible but demanded. He does not wish to be understood as advocating the removal of every diseased ovary. Far from it. He declines operation in many cases where the patient is anxious for it. He tries to be conscientious and operates only where the disease is so advanced that it has or is likely to render the woman an invalid, and is incurable by any other means. The author's experience with catgut as sutures or ligatures has been unsatisfactory. He never uses it except when he does a trachelorrhaphy and perineorrhaphy at the same sitting. It is hard to sterilize, is soft, slips easy, is hard to tie with any assurance of safety, and is absorbed too quickly. While he had always deprecated the use of opium in abdominal work, he had used it with great care and caution. Increasing experience convinces him that those cases in which it is not given at all do much better and their convalescence is more satisfactory in every respect. Where the pain is so intense and threatens to exhaust the patient from continued suffering, he thinks it advisable to use opium moderately and with great care.

At the conclusion of the paper, Dr. Holmes exhibited a few specimens removed from women who had been the victims from one to three years of the so-called conservative treatment with iodin, iodized phenol, nitrate of silver, nitric acid, carbolic acid, and other similar caustics.

DR. T. M. GREENWOOD, of Mineral Bluff, read a paper on

OBSTETRICS AS PRACTICED IN THE MOUNTAINS OF NORTH GEORGIA.

The author said that a prominent laparotomist of the South stated that healthy mothers were gradually "playing out," but thinks his observation was largely confined to the cities. Their habits before puberty are all that nature requires—plenty of pure fresh air, bodily exercise, as necessitated by their daily avocations; clothing loose and suspended from the shoulders; diet plain and simple but nutritious and plentiful. In girlhood they roam the fields and forests as boys, vieing with them in strength and surpassing them in many instances in the athletic sports; when suddenly puberty arrives, a change comes to them almost imperceptibly, and they are women, and very soon afterward become mothers. Of the 100 nullipara which the author had attended in labor and noted the age, 75 of them were 18 years of age and under, the youngest being thirteen years and two months. He had heard of a case a little over 11 years of age. They were all normal labors and made good recoveries.

Owing to lack of time, several papers were read by title and referred to the Committee on Publication.

The following officers were elected:

President, Frank M. Ridley, of La Grange; First Vice-President, W. H. Doughty, of Augusta; Second Vice-President, M. L. Boyd, of Savannah; Secretary, R. H. Taylor, of Griffin; Treasurer, E. C. Goodrich, of Augusta.

On motion, the Association adjourned to meet in Augusta the third Wednesday in April, 1896.

After adjournment, the Association enjoyed a steamboat excursion down the Savannah River to the Atlantic Ocean, and partook of an "oyster roast" on Wilmington Island.

Blank Applications for membership in the ASSOCIATION at the JOURNAL office.

American Electro-Therapeutic Association.

Fourth Annual Meeting held in New York Academy of Medicine, New York, Sept. 25, 26, and 27, 1894.

WILLIAM J. HERDMAN, M.D., President.

(*Continued from page 640.*)

AFTERNOON SESSION.

The meeting was called to order by the PRESIDENT at 2:30 P.M. Report of the Committee on

STANDARD ELECTRO-STATIC OR INFLUENCE MACHINES,

by DR. WILLIAM JAMES MORTON, Chairman.

The Committee would add to the recommendation of last year that the minimum size of machine should consist of six revolving discs of glass of at least twenty-eight inches in diameter, instead of four discs as then recommended; and recommend the *a*, inclosing case; *b*, separate exciting machine within the case; *c*, any convenient arrangement of parts to produce the static induced current. All these recommendations are now well established in practice.

DR. W. J. MORTON read a paper on

ELECTRIC MEDICAMENTAL DIFFUSION.

METALLIC ELECTROLYSIS—CATAPHORESIS—SOLUBLE METALLIC ELECTRODES WITH ILLUSTRATIVE CASES OF TINNITUS AURIUM, TRACHOMA, NASAL AND POST-NASAL CATARRH, URETHRITIS, TONSILLITIS, VASCULAR TUMOR, DERMOID CYST, NÆVI, SYCOSIS, ETC.

It often happens in medicine that a new method of procedure makes its way to success by a series of steps not seemingly related to each other in time or relevancy. This observation seems to me to be true of a number of individual therapeutic procedures which during recent years have been brought to the attention, particularly, of those interested in applying electricity to the cure of disease. Reaching back to the time of Fabré-Palaprat in 1833 (introduction of iodid of potassium through the skin), including the success of Benjamin Richardson in 1859 (voltaic narcotism) and culminating in recent years in the practical applications of Peterson, the writer and others (electro-cocain anesthesia, etc.), the term cataphoresis has sufficed both to name and to explain the practical facts. By aid of this principle of cataphoresis, fluids of the human tissue may be moved about, particularly in parts free from active blood circulation, from the positive to the negative pole, or medicine held in solution at a positive pole may be caused to penetrate the skin or mucous membrane at the site of that pole. The practice is equally available whether the polar electrode be the usual small one, or be a large one, as in the case of the water of an electric bath. And not only may medicines be thus introduced (as demonstrated by an examination of the urine) but they may also be removed from the human system (as demonstrated by using a bright copper plate electrode for the negative pole in the bath and finding a removed metallic deposited upon the copper). So far as relates to the introduction or the removal of medicinal substances, I have termed the process cataphoric medication and cataphoric demedication. I have also established a method useful in gouty and rheumatic joints and in other conditions of cutting off the blood supply by rubber rings or by an Esmarch's bandage and thus affording the medicine introduced greater facility to act upon the affected tissue. This process I have termed anemic cataphoric medication. Turning to another set of the isolated phenomena, which I am about to suggest may be included under one general caption and nomenclature, we are confronted with that great and fundamental principle of electrolysis without which there would be no conduction of electricity in the human tissue, and yet so diverse are its exhibitions according to the strength of the current, according to the actual decomposition of the tissue or its non-evident decompbsition, and according to the fluids in solution at the poles of the applied electrode or the nature of the electrode itself when introduced within the tissue, that confusion reigns as to specific effects and methods.

Involved in this principle of electrolysis and the introduction of medicamental substances into tissue, there are a great variety of special processes as, for instance, cataphoric medication already alluded to, and furthermore, processes where the electrode itself furnishes by electrolysis of its own substance the new medicine introduced (soluble electrodes) or where an insoluble electrode conveys the current which decomposes a fluid introduced within the cavity to be treated. The two latter methods are known as the "interstitial electrolysis" of Gautier, or in the case of the soluble

electrode as "metallic interstitial electrolysis" of the same author. The simple fact which arises out of this confusion is that the electric current causes a diffusion of the medicines into and throughout the tissue.

It matters not whether the medicine in solution be applied by a sponge or blotting paper against the skin (cataphoric medication), be held in solution in the water of an electric bath (again cataphoric medication), be injected into a cavity and decomposed (interstitial electrolysis), be dissolved by the action of a current off of a needle perforating the tissue (metallic electrolysis), or be dissolved from an electrode held in contact with mucous membrane (also metallic electrolysis); the result is the same—a foreign substance in solution, viz., a medicine is caused to enter and permeate the tissue. It therefore seems to me to be a proper time to generalize the entire facts under the term of electric diffusion of medicines into human tissue or, simply, *electric medicamental diffusion*.

To secure this diffusion it is only necessary that the artificial and applied electrolyte (the medicine or substance in solution) be caused to constitute a part of the electrolyte into which it is to be diffused and then the general principles of both electrolysis and cataphoresis come into play; the various ions are redistributed or diffused according to well-known laws, while also, equally, the principle of cataphoresis is at work whereby irrespective of ionic distribution, fluids are moved from the positive to the negative pole or sometimes *vice versa*. This diffusive property of the current, taken advantage of in connection with human tissue, opens out to electro-therapy and general medicine an immense and a fascinating field of study and practice, and in many important directions points out entirely new treatments of a great variety of diseases thus far not commonly treated in this manner. The field is so broad a one that I will confine myself in this communication to the electric diffusion of metallic salts, one form of the interstitial electrolysis of Gautier.

ELECTRIC DIFFUSION FROM SOLUBLE ELECTRODES.

The destructive electrolytic action in human tissue of either pole of a continuous electric current is perfectly familiar. The electrodes are usually of metal, and care is taken that they be unoxidizable, as is, for instance, platinum or gold, if they are to be used at a positive pole, while, if used at the negative pole, they may be oxidizable or not. The positive pole electrode, when the current is in action, forms oxygen and acids out of the tissue itself; the acids are mainly hydrochloric, sulphuric and phosphoric. The negative pole forms hydrogen and alkalies, the latter usually caustic soda and potash. Each pole is practically a little chemic workshop by itself—the one acid, the other alkalin; the analytic and synthetic energy being furnished by the electric current and the materials acted upon being furnished by the tissue. The resultant and desired destruction of tissue is due to a number of factors, chief among which are that amount of tissue used to make up the newly formed and foreign chemicals, the secondary action of these newly formed products upon the remaining tissue, and the disruptive effects upon the structural composition of the tissue of the gases interstitially liberated. And the character of the artificially produced lesion and its resultant eschar is determined, to a great extent, by the second of these actions, whether it has been an acid or an alkalin corrosion or destruction. The lesion resulting at the negative pole is rich in fluids (by cataphoresis), and is slower to heal; it leaves, however, a smoother and less contractile cicatrix (an important consideration in the removal of facial blemishes). The lesion resulting at the positive pole is comparatively dry (also by cataphoresis), is quicker to heal and leaves a rougher and more contractile scar.

It will be observed that in this, the familiar form of electrolysis, no account is taken of the nature of the active electrode employed except that it be unoxidizable, insoluble, and therefore indestructible, and that as a consequence reliance for the electrolytic effect is based directly upon the characteristic effect of the current upon the tissue and not upon its effect upon the electrode. Any action of the current upon the electrode is, in fact, carefully guarded against.

But if we turn our attention to the nature of the metal which composes the electrode, be it the positive or (as I have demonstrated) the negative, an entirely new field of investigation and of results is opened out to our view. If our positive electrode be composed of a metal which is attacked by oxygen or by chlorin (formed at that pole out of the tissue), then a new chemic compound is formed at the point of the application, and we have no longer to deal with the effect of the liberated chemicals directly upon the tissue, but we are confronted with a new effect, viz., that of the newly formed chemic compounds (metallic salts) upon the tissue. And since, owing to the nature of human tissue, hydrochloric acid is pre-eminently formed at the positive pole, we shall find if copper, zinc, iron or other attackable metal is the metal employed at that pole, that we have formed respectively the oxychlorids of copper, zinc, iron, etc., double salts of the metal.

In this connection we may observe the further interesting fact that under the above circumstances the action of the current is almost entirely expended in decomposing the metal, and that as a consequence the undesirable destructive action of the usual electrolysis is avoided. For, as I have observed in practice and as will be seen upon reference to the cases in which this method of treatment is applicable and peculiarly efficacious, the destructive action of the current would be in the highest degree detrimental. The object is not to destroy tissue, as by actual cautery or by the application of caustics, but to implant within it and permeate it with the newly formed metallic salt. In fact, so distinctive is this new method, which is termed by Gautier, its modern author, interstitial electrolysis, from common surgical electrolysis, that it is unfortunate to use the term, electrolysis, at all in relation to it. The electrolysis is, as has been pointed out, principally of the metal, and but to a very limited extent of the tissue. A far more characteristic feature of the process is that the product of the electrolized metal permeates tissue, and it is for that reason that I feel compelled, in speaking of the method, to designate it as electric diffusion.

Another noticeable feature of electric diffusion of salts formed from soluble electrodes is that a remarkably low current strength suffices to set free a large amount of the metallic salt. Here, again, is a reason that very little of the usual electrolytic destruction of tissue ensues. Gautier, indeed, calls attention to this fact, and characterizes this method in its gynecologic applications as one of low current strength and long sittings, in contra-distinction to the Apostoli method of high current strength and short sittings. In practical work, I have found that very low current strength, from 1 to 10 milliampères, gives much better results than from 10 to 50 milliampères. In this connection it should be noted that the electrode loses in weight. Gautier has found, as would be expected, that the loss in weight is proportional to the current strength and the duration of the current flow.

Again, the solution of the metallic electrode is not confined, as thus far supposed, to the positive electrode alone. I have found by experiment that soluble electrodes may also be employed at the negative pole. One of the best of the metals for this purpose is aluminium. The extension of metallic electrolysis to the negative pole greatly widens the field of this new method, since, while at the positive pole we have thus far been confined to the oxychlorids of metals we now at the negative pole may apply to diseased tissue another class of metallic salts.

Electric diffusion, as the word, diffusion, indicates, possesses an obvious advantage over the ordinary topical applications of similar or other metallic salts of copper, zinc, iron, aluminium or other metals. For it is obvious that not only is the salt dissolved off of the metal, but by another and further property of the current it is forced into the tissue in a radiating direction around the metallic electrode. In this respect, electric diffusion is remarkably unlike the application of the ordinary solutions by a brush, spray or injection, or their injection into tissue by the hypodermatic needle. The solution of the salt is not only applied but it is driven in. To use a homely simile, a wash or spray is like a nail held against a board, while electric diffusion plays the part of the hammer which drives the nail home.

HISTORICAL—ELECTRODES—TECHNIQUE—CASES—CONCLUSIONS.

The dissolving action of the electric current upon a metallic electrode, constituting a positive pole and applied within human tissue, had been noted by various authors in relation to the treatment of some diseases, particularly tumors, by electrolysis. Both Butler and Stevenson and Jones refer to this action upon zinc needles and point out the conjoint efficacy of the combined destructive action of the current and the newly formed chlorid of zinc.

Onimus, of Paris, and Prochownick, of Hamburg, appear to have casually used soluble electrodes at the positive pole. The latter applied a copper sound with a current strength of from 80 to 100 milliampères in a case of gonorrheal infection of the uterine cervical canal.

But these isolated observations made almost no impression upon practice, and it remained for Dr. Georges Gautier,

of Paris, to grasp the broad idea of diffusing metallic salts from soluble electrodes and to inaugurate by a series of experiments this new system of procedure.[1]

At once appreciating the far-reaching merits of the new method, I established its use in a great variety of cases in my clinic at the New York Post-Graduate Medical School and Hospital as early as 1891, and also at the same time in private practice. The method was taught to matriculates by actual demonstrations. Experiments were made of its effects in trachoma, hypertrophic nasal catarrh and ozena, gonorrhea, keloid, and continued, in a great variety of diseases, and with a variety of metals at the positive pole. Obviously, the method once understood implies its application to a large number of cases and by any soluble metal. Papers and contributions to journals and societies have been published by my clinical assistants detailing my work and instruments and by Dr. Clarence C. Rice, of New York City.

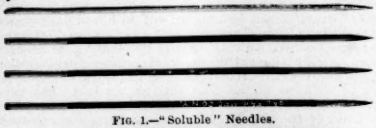

FIG. 1.—"Soluble" Needles.

FIG. 2.—"Soluble" Bulbs.

FIG. 3.—"Soluble" Bulbs.

FIG. 4.—Protected Soluble Electrodes.

Electrodes.—Successive applications to diverse morbid conditions continually suggested new electrodes suited to the individual classes of disease. These have been made as occasion arose by the Galvano-Faradic Manufacturing Company, of New York City, and may be bought of them.

Needles, Fig. 1. These are manufactured of any desired metal. I use, preferably, copper, zinc and iron at the positive pole and aluminium at the negative. About 1 millimeter in diameter and 8 centimeters in length form a convenient size. Insulated material restricts the action of the current to the locality desired to be affected and prevents action upon the sound skin. They fit an ordinary needle holder.

Bulbs.—Figs. 2 and 3. Like the needles these are manufactured of a variety of metals. For convenience they are constructed in sizes of the French catheter scale, each bulb capable of being attached by a screw thread to a universal handle. The sets resemble those known as Dr. Fry's, and were first made of copper by Dr. A. H. Goelet.

An important modification of the bulb (Fig. 4), devised by the writer more than a year ago, is to divide it longitudinally into one-half metal and the other half ebonite, thus affording a protected and an active side of the electrode, for it often happens as in the rectum, urethral canal, cervical canal and other canals, sinuses or cavities, and in trachoma that it is undesirable at a single treatment to attack approximating surfaces; again, it may be desired to protect a given surface.

The handle curved at right angles is used in the post-nasal cavities. The metal may be bent to any desired angle; its tip is insulated and an insulating sheath exposes any desired area for active effect.

Obviously, electrodes for special cases will suggest themselves, and types familiar in form will be constructed of soluble metals as occasion demands.

Technique.—I have already expressed a preference based upon much experience, for low current strength and prolonged time. It is difficult to lay down rules which shall apply in so many diverse diseases. In needle puncture (copper or zinc needles) I prefer to use no more than 2 milliampères applied at any one site for about three to five minutes. In a case of sycosis, reported later on this was quite sufficient to cure the disease. In lupus, ulcerations, pustules and acne this is also quite enough current strength. Gautier reports using 50 milliampères in a case of lupus, but I have found the high current strength seriously objectionable because of the consequent electrolysis of tissue and extension of the time of healing. In hypertrophic nasal catarrh with copper bulbs, I find about 4 to 8 milliampères sufficient. In ozena the same; in trachoma 1 to 2 milliampères and in intra-uterine applications from 10 to 20 milliampères; in gonorrhea 1 to 2 milliampères.

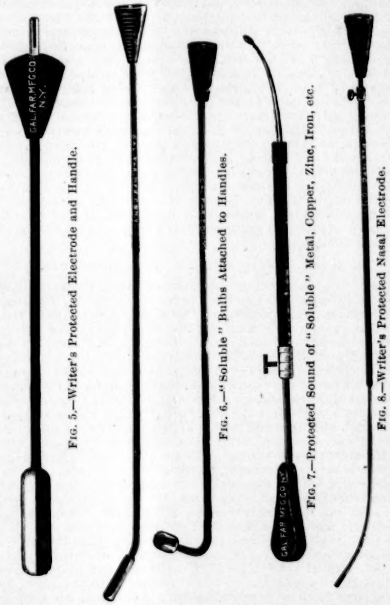

FIG. 5.—Writer's Protected Electrode and Handle.

FIG. 6.—"Soluble" Bulbs Attached to Handles.

FIG. 7.—Protected Sound of "Soluble" Metal, Copper, Zinc, Iron, etc.

FIG. 8.—Writer's Protected Nasal Electrode.

No positive rule can be laid down, since much depends upon the size of the electrode. In order to facilitate accuracy of dosage, I employ copper bulbs graduated according to the French scale of catheter or other electrodes whose surface area is a known quantity.

The operator may convince himself, if he desires, of the great rapidity of the electric diffusion of the copper salt by sticking the needle lightly into his own skin, or that of a patient, and watching the almost immediate formation of a small circular area of an apple green color. This is also well

[1] Revue Internationale d'Electrothérapie, July, 1891, August and September, 1892. Also Technique d'Electrothérapie, by Drs. Gautier and Larat.

seen in a small wart or similar growth; the mass turns light green. Or the copper needle may be inserted into the white of a "hard boiled egg" or into a piece of meat, and the same rapid formation and diffusion of the copper salt be noted.

A practical point of importance is to thoroughly polish each electrode immediately before using it. This is easily accomplished by the aid of a piece of fine emery paper.

The adherence of the electrode to the tissue is a peculiarity and a danger. Even with a current strength of from 2 to 4 milliampères this adherence is noticeable. Therefore even when low current strength is employed as during the application of smooth metallic surfaces to mucous membrane as in nasal and throat diseases, in trachoma, urethritis, etc., the electrode should be kept in slow movement, either longitudinal or rotatory. In the case of needles plunged into tumors and of sounds within the uterus this adherence can not be overcome by any safe manipulation; the needle must be loosened by reversing the polarity and using from 4 to 8 milliampères for about five minutes. The adhesion is due to the formation of an albuminoid salt of copper (where the electrode is of copper).

An operative outfit consists of any good galvanic battery, a water rheostat, a sensitive galvanometer needle and appropriate electrodes.

Cases.—I present the records of a few illustrative cases. It is needless to say that much has been learned as to technique, precision and efficacy in securing results in individual diseases since my first cases were recorded. Certain cases of lupus, cancer, etc., now under treatment are reserved until sufficient time has elapsed to enable a mature opinion to be given as to results.

CHRONIC TINNITUS AURIUM.

Probably there are few minor troubles more annoying to the patient than a chronic ringing in the ears; certainly there is no minor condition more difficult of cure. The cases as I have seen them are often associated with some degree of catarrhal trouble and commonly with tympanic vertigo and moderate deafness.

Case 1.—H. E., age 33; cured. Referred to me March, 1893, by Prof. D. B. St. John Roosa, to relieve him, if possible, of a most annoying and persistent ringing in both ears. Five years ago had a "dry throat;" had little saliva; mucous membranes cracked and bled; was treated by sprays for two years with no benefit; then used antiseptic washes. The uvula was elongated and had been cut off. Throat never ceased to trouble him. Two years ago had the grip, and about this time the ringing began. Present condition: weary, "nervous," depressed and irritable with much frontal headache and an almost continual ringing, worse in the left ear. The sound is like that of a distant cricket or like a sharp whistle; it worries him most when he is tired or when he lies down or after sexual intercourse. Sleep is often disturbed because he can not get rid of the sound in his ears. As a rule it is worse at night. Has likewise much post-nasal discharge. Hearing in left ear considerably impaired; has some vertigo. The first treatment to the ears and throat was by the static induced current, then the sinusoidal, both followed by amelioration in the degree of the sound and by intervals when it ceased for a few hours. But the progress was not satisfactory to me and I determined to treat the catarrhal condition first and cure it, before following up further applications to the aural region alone.

March 29. Electric diffusion, copper bulb, throughout the post-nasal and pharyngeal region, 12 milliampères five minutes to each side.

March 31. Discharges from nose anteriorly and posteriorly almost *nil;* ringing about the same.

April 3. Ringing unimproved; headache better; slight nasal discharge. Repeated treatment.

April 4. Raises slightly thick discharge from throat; watery discharge from nose; ringing same as ever.

April 5. No discharge. Treatment repeated. Reports never felt so well for years, of the catarrhal symptoms. Ringing in ears ceased during the treatment.

April 7. Headache; ringing in ears worse; no nasal discharge. Treatment five minutes, 10 milliampères.

April 8. For a half hour after rising this morning was free from the ringing.

April 10. Ringing ceases for long periods; no nasal discharge.

April 13. Ringing continuous. Treatment same.

April 14. Ringing very slight; no headache; very little nasal discharge. Treatment, five minutes, 5 milliampères.

April 15. Much ringing in left ear.

April 19. Reports a discharge from the left nostril which colored the pillow in the night; a good deal of catarrhal trouble; bright yellow discharge and intense headache, also that his hearing was not so good. Discontinued treatment at the patient's request.

May 3. Against the patient's desire I persevered with electric diffusion, applying the electrode freely to his hypertrophied tonsils and post-nasal region on the sixth, tenth and thirteenth. The ringing still persisted in a marked degree.

May 19. Ringing the same; vertigo. Treatment same.

May 25. Ringing and catarrhal troubles have ceased since last treatment. The throat presented an almost normal appearance; the narrowing and congestion of the fauces had disappeared; the tonsils were normal in size. One more treatment was given and the patient was allowed to cease, as nothing further remained to be accomplished. The treatment by electric diffusion from copper had occupied about two months and had been repeated about twelve times.

Jan. 30, 1894. Patient reports that he has had no further ringing in ears and remains well of it, in spite of an attack of the "grip" during the winter.

TRACHOMA.

With the pathology and histology of this disease we have here nothing to do. It is merely a question of causing the absorption of the sago-like granulations or elevations in the conjunctiva, with the relief of the associate symptoms of pain, lacrymation and in the acute varieties the mucus discharge. The classical treatment is by operative or medicinal measures. The former removes the granulations by squeezing out their contents; the latter attempts to cause absorption by setting up by various drugs a certain grade of inflammatory reaction. It is here proposed to treat this obdurate affection by another method, viz., the combined action of electricity and a nascent metallic salt caused to permeate the affected tissue by means of the diffusive property of the electric current. This method is very successful.

The use of electric diffusion in this disease first occurred to me in the case of an Italian woman under treatment for goitre at my clinic. The case briefly follows:

Case 1.—Jan. 4, 1892, R. P., age 50; trachoma, both lids of both eyes. Extreme photophobia; intense corneal vascularity; excessive lacrymation; trachomatous bodies ("sago grains"); impaired vision. Treatment, electric diffusion from a copper electrode. An impromptu electrode was formed by bending a piece of copper wire into a suitable U-shaped loop. The loop was then passed *slowly* over the affected surfaces of the lids, while at the same time a current of 2 milliampères was flowing. The reader is referred to later cases for more typical results, for the reason that the treatment was inadvertently substituted at times by the use of the negative pole. But the cornea cleared, the trachomatous bodies became greatly reduced in number, the photophobia was much less, no lacrymation; the vision improved; the patient could see better and was able to read. This case simply initiated a method which was afterward carried out with more care and greater detail in my clinic, by myself and my assistants.

Care in manipulation is requisite. The eyelid should be everted as is usual in applications of the sulphate of copper or alum pencils, or the special protected electrodes devised by myself (Fig. 4) may be employed, without everting the lids. The electrode should be kept very slowly in movement or it will adhere to the conjunctiva and cause slight laceration upon removal, or at least compel the operator to reverse the polarity. Any metal, soluble at either pole may be employed, but copper and zinc are undoubtedly the best. The electrode without current will cause pain and with current somewhat more pain. To annul the pain, cocain may be used in the usual manner.

Case 2.—Acute trachoma, first stage. March 22, 1893, patient age 11, had purulent conjunctivitis; upper and lower lids of both eyes trachomatous. Treatment: Electric diffusion from copper electrode, 2 milliampères, one minute to each lid. After the first treatment the photophobia almost entirely ceased and the granules diminished in size. The patient received six applications and was cured. April 29, 1894, about a year later, reports that he had remained well.

Case 3.—July 21, 1893. P., age 21; trachoma second stage. Referred to the clinic by Dr. Francis Valk, of the Ophthalmological Department of the Post-Graduate Medical School. During one year had suffered severely from photophobia, lacrymation and pain. Extensive ulceration of cornea and lids highly trachomatous. Treatment: Electric diffusion from copper electrode, 3 milliampères. July 24, patient much better; no pain; swelling of lid and ptosis of right

eye much diminished. Less photophobia, soreness and lachrymation, trachomatous bodies very much softer and less gritty to contact of electrode. Electric diffusion from copper, 10 milliampères from two to three minutes. July 26, edema of the lids has entirely disappeared; slight ptosis remains; no lachrymation; trachomatous bodies no longer isolated; cornea almost entirely clear. Same treatment. July 31, after the fourth treatment the trachomatous bodies had become entirely absorbed. Cornea perfectly clear. Dr. Valk stated that the result "was 50 per cent. better than he could have secured with the classical methods of treatment." Six more similar treatments completed the patient's cure, with the simple exception that some slight conjunctival redness remained as well as a moderate sensitiveness to bright sunlight. May 8, 1894, as the patient has never returned he presumably has remained cured.

Case 4.—July 21, 1893, A. D., age 8; trachoma, second stage. Purulent conjunctivitis with congestion and edema of the surrounding tissues; both upper and lower lids profusely covered with trachomatous bodies. Five treatments, electric diffusion from copper electrode, 3 to 7 milliampères; cocain. The first treatment was followed by diminution of the mucus discharge; of the pain, lacrymation and photophobia; the trachomatous bodies softened and were gradually absorbed. Cured.

Case 5.—August 30, 1893, W. T., age 16; granular lids for seven months; pain; stiffness of lids; photophobia; morning adherence of lids; electric diffusion from copper, 3 milliampères. After twelve treatments, case cured by October 30. Applications were imperfectly made, owing to the refractory nature of the patient.

Case 6.—Jan. 15, 1894, K. S., age 17; native of Egypt; trachoma, third stage; always had weak eyes; began to be troublesome five years ago. Has photophobia, lacrymation, constant muco-purulent discharge and pain. Can only see as "through smoke." Palpebral conjunctiva scarred and white. Both lower lids, palpebral conjunctiva, adherent and dragging in the eyeball. Cicatricial conjunctivitis. Case "incurable." Treatment: Electric diffusion from zinc electrode, 5 milliampères to conjunctivæ of both eyes. March 9, 1894, reports both eyes better; now sees clearly; lacrymation has ceased; lids are no longer glued together in the morning by the mucus discharge. Repeated diffusion from zinc, 3 milliampères to lids of both eyes. March 23, 1894, adhesions between the conjunctiva and the eyeball at the left lower lid were treated with negative electrolysis, 1 milliampère. April 18, 1894, palpebral conjunctivæ have assumed a more normal appearance. Circulation improved; less induration; patient regards herself as very well.

Case 7.—March 23, 1894, M. B., age 11; acute trachoma, first stage. Lids edematous; conjunctivæ injected; lacrymation, upper and lower lids of both eyes trachomatous. Treatment: Electric diffusion from copper, 1 milliampère. March 26, no edema; conjunctivæ lessened; sago grains have disappeared; treatment same. March 28, 1894, much better; slight redness of conjunctivæ; no mucus discharge, pain or photophobia; eyes clear and bright, 3 milliampères to both eyes. April 13, 1894, cured.

HYPERTROPHIC RHINITIS AND PHARYNGITIS.

The class of cases here referred to were of a chronic type and exhibited anterior and posterior nasal discharge, generally thick and purulent; the disturbed sensation of swallowing, due to retained secretions in the post-nasal space, narrowing of the rhino-pharynx and the characteristic symptoms of hypertrophy of the nasal and pharyngeal mucous membrane. Their treatment was carried out by electrodes of copper and zinc devised by the writer, see Figs. 3, 4 and 6, and by a method devised and taught by him to clinical assistants, among others to Dr. M. A. Cleaves, who has written a paper whose originality is derived substantially from the writer's teaching in this as in other branches of metallic electrolysis. Struck by the results obtainable in this disease by this method, I also called the attention of Dr. Clarence C. Rice of the Department of Laryngology, Post-Graduate Medical School, to these results and he has, he writes, made trial of the soluble metallic electrodes in a number of cases which he has reported at a meeting of the American Laryngological Association in Washington.

Case 1.—Nov. 27, 1891, B. M., age 15. Ozena. One year ago patient contracted an acute catarrhal cold; it continued a month; since then has had a chronic catarrhal condition of the nasal passages. Odor began four months ago. There is a greenish muco-purulent discharge from the nose, post-nasal droppings and a slight irritative cough. Treatment: Electric diffusion from copper electrode. As in the first trial of this method in trachoma, so in this case the negative pole was also used. But experience soon taught me to confine the treatment to electric diffusion from the positive metallic electrode. By December 9, after four treatments the discharge was less, the odor less noticeable and the respiration freer.

January 8, examined by Dr. C. C. Rice who reports deviation of septum toward right; left nostril twice the width of the right; middle turbinated bones covered with dry scaly secretions; pharynx dry with hypertrophied ridges on the sides. Further treatment by diffusion from copper was carried on, 1 milliampère for ten minutes. January 15 and 18, 5 milliampères each nostril, also same January 20, 22 and 27. Discharge diminished and less greenish. February 1, 3 and 5 same treatment. Patient though not cured is much better; less discharge, odor and headache. Improved.

With the present improvement in methods and electrodes I should expect to cure this patient should the opportunity present itself.

Case 2.—August 8, 1893, D. L. G., age 41, ozena; post-nasal catarrh, atrophic. Has always "taken cold" easily. Had catarrh at 13 years of age; at 18 it had increased a great deal and he began to use salt water and a great many other nasal douches and "went to a great many doctors." His sense of smell became much impaired nine years ago and has been growing worse ever since, until at present he can not detect odors. The patient states, though I have had no opportunity of verifying his statement, that one year ago he had the antrum opened by Dr. Toeplitz, assistant to Dr. Knapp, and pus evacuated. This opening is still patent and must be plugged twice daily. Symptoms: Copious and most offensive anterior and post-nasal discharge; a great many crusts form; the nose bleeds easily; odor from patient's nose and mouth most offensive. Treatment: Electric diffusion from copper bulbs, Nos. 27 and 29 (Fig. 3) to naso-pharynx, 15 to 25 milliampères, occupying about five minutes. August 11, same treatment. Pharynx very much less congested; more discharge; patient says he feels very much better. August 15 and 23, crusts free themselves more easily; increased discharge from nose and slight bleeding after douching; treatment same. August 30, patient reports that his condition is very greatly improved; the incrustations remarkably diminished; very much less discharge, and that morning for the first time in eight years the sense of smell had returned to him and he had smelled paint and once more enjoyed eating; there was no offensive odor. The patient expressed himself as "50 per cent. better," and stated that no other treatment had ever accomplished as much for him.

Case 3.—Oct. 21, 1892, A. R, age 9, profuse muco-purulent discharge from the nose; nasal and pharyngeal obstruction of one year's duration. Treatment: Electric diffusion from copper electrode, about five minutes in duration and with a current strength varying from 5 to 10 milliampères. Symptoms began to improve at once and after fourteen treatments, each several days apart, the patient was cured.

Case 4.—April 5, 1893, F. A., age 20; hypertrophic rhinitis. Had diphtheria in November, 1891. Ever since has had severe catarrhal trouble in frontal sinuses and nasal passages, anterior and posterior. Profuse, thick, yellowish discharge and much dropping of the discharge posteriorly. Feeling of intense fullness across forehead; upper lip and anterior portions of nose reddened and excoriated. Treatment: Electric diffusion from copper electrodes in anterior and posterior nasal passages on the left side. April 12, discharge not nearly so profuse nor as yellow on the side treated; less redness about the nose and lip. Right side treated in same manner as left; 10 milliampères for five minutes. Like many patients of this class he did not return and the case merely suffices to point out the immediately favorable effect of the first treatment.

Case 5.—Mrs. G. W. E., age 34, nasal catarrh, hypertrophic. Has had catarrh for three years with constant "dropping in back of throat," heaviness and dullness in head around eyes; used handkerchief constantly; good deal of nausea.

April 28. Electrolytic diffusion to left nostril. Positive pole, 3 milliampères for fifteen minutes.

May 3. Feeling of heaviness in head in morning gone; no nausea; application made to left nostril 5 milliampères, ten minutes; nose feels very much clearer; discomfort from application gone in half an hour.

May 5. Same treatment to both nostrils; is feeling a

NOTE.—Unfortunately, owing to unavoidable circumstances, this patient ceased treatment and has not since been heard from. It is to be regretted that the same treatment, as might easily be done, should not have been tried for the antrum.

good deal better; dropping in back of throat gone; scabbing in interior nostril does not occur, also diminution in amount of discharge.

May 9. Until yesterday felt well; has taken cold and amount of discharge has greatly increased; large scab in left nostril; this was treated locally.

May 15. Very much less discharge; 6 milliampères to each nostril.

June 24. About twelve treatments more of same strength; application also made to pharynx and naso-pharynx, about 10 milliampères. Is very much better and is troubled but little. Went away on vacation at this time and the last of September returned feeling well and nasal symptoms entirely relieved. Cured.

Case 6.—Miss H. J., age 48; post-nasal catarrh. About fifteen years ago affection began in left side; had ringing in ears and heavy cold; since has had constant buzzing on that side; ticking of watch not heard; right ear normal. Is not particularly susceptible to colds; hearing is worse with a "cold;" no pain; has dropping of secretions into throat. Appearances, left side, pharynx atrophic; right side, pharynx hypertrophic; soft palate and entire isthmus dusky red. Treatment: Electrolytic diffusion 10 milliampères, applied positive pole about six minutes all over pharynx, also through left nares 10 milliampères five minutes. For a few minutes the amount used was 20 milliampères. Cured.

FOLLICULAR TONSILLITIS.

Case 1.—Oct. 18, 1893, B. G. A., age 15, throat began to be sore two days previously; painful and swollen; sense of malaise and nausea; tonsils enlarged and grayish-white spots on both. Treatment: Electric diffusion from copper electrode to every spot.

October 20. No more trouble with throat. Tonsils normal in appearance except for slight increase in their normal redness.

Case 2.—Jan. 18, 1894, F. D., aged 18; shivering and hot flushes, malaise; temperature 100; grayish-white spots on tonsil. Treatment: Electric diffusion from copper, 10 milliampères to every follicle as well as over entire tonsil. January 17. Patient reports that the throat was entirely relieved the next morning and to-day feels entirely well. Tonsils about normal in appearance.

URETHRITIS.

Case 1.—May 4, 1892, A. M., age 30; contracted disease in December, 1891. For ten months thought himself well. Discharge recommenced May 1, 1892; slight, free and painless; no treatment.

May 1. Treatment: Intra-urethral (from neck of bladder to entire mucous surface), 2 to 3 milliampères electric.

May 11. Electric diffusion from copper electrode, 2 to 3 milliampères. A brass bulb of proper size and connected to an insulated stem was passed as far as the neck of the bladder, the current turned on and the electrode then slowly withdrawn, thus bringing under the influence of the cupric and zinc diffusion the entire urethral surface. The dispersing electrode was placed upon the abdomen.

Mny 13. Patient reports that the discharge has entirely ceased. Later on he reported that it never returned and he remained cured.

Case 2.—A. M., March 19, 1893. One year later the patient referred to in Case 1, exposed himself to a new infection and contracted a severe attack of urethritis. Mindful of his previous cure he returned for the same treatment. The discharge was profuse, whitish and of the usual consistency; there was pain upon micturition. Treatment: Electric diffusion from copper, 4 milliampères, the electrode slowly withdrawn. At one moment when the electrode temporarily adhered or "stuck," the current was reversed to negative to loosen it.

March 27. Reports that he is much better.

March 29. Reports to day complete cessation of the discharge after the treatment of the 19th, but that he has now a slight relapse from "drinking too much." Treatment renewed.

March 31. Reports that he is cured.

It may be noted here that extreme care to prevent adhesion of the electrode to the mucous membrane must be exercised in these cases. A delicate milliampèremeter is imperatively necessary, as well as a good rheostat. From 2 to 3 milliampères of current is sufficient and the electrode must be kept in motion. At least this is the method of treating the urethra which has forced itself on my attention as essential. It is beyond question the great feature of this method, in contra-distinction to that by injections, that the mucous membrane is electrically permeated with any given metallic salt, say the chlorid of zinc or copper, rather than simply superficially washed by a solution of the same salt. There is an actual chemic union of the metallic salt and the deeper albuminous constituents of the tissue.

TUMORS, ETC.

Case 1.—May 18, 1892, L. S., age 60; vascular tumor on upper lip, nine years' standing, increasing in size. Three-fourths of an inch in diameter, bluish cast of color and can be partially emptied by pressure. Treatment: Electro-cocain, local anesthesia; first punctured by a platinum needle, positive pole, 15 milliampères for ten minutes. Upon withdrawing the needle, considerable hemorrhage ensued. It therefore occurred to me to insert an iron needle, positive pole, and secure the electric diffusion of the oxychlorid of iron—a styptic salt. This was done with 15 milliampères for five minutes. There was no hemorrhage upon the withdrawal of the needle and the tumor shrunk visibly in size.

May 20. Tumor more compact; electric diffusion from an electrode 25 milliampères, twenty minutes. To withdraw the electrode without tearing tissue, the current was reversed at 15 milliampères for five minutes; no hemorrhage; needle almost destroyed by the action of the current. Tumor contracted.

May 23. Tumor reduced one-third in size. This patient did not return.

Case 2.—Feb. 13, 1894, Mrs. R., age 30; lipoma, one and one-half inches long by one inch wide at base of neck. Patient was unwilling to take ether to have the growth removed and did not want to have a scar. Experimentally, since I knew of no previous fatty tumor removed by electricity, I consented to try and extirpate it. Operation: Electro-cocain, local anesthesia, 7 milliampères, 10 per cent. solution cocain for ten minutes. A puncture was made with a microscopic trocar and the small piece of tissue sent to Dr. H. T. Brooke of the Post-Graduate School, Pathologic Laboratory, for examination. He subsequently pronounced it to be a lipoma. A copper electrode, three-quarters of an inch in length and one-sixteenth in diameter was inserted into the puncture made by the trocar, the skin being protected by the insulation of the stem of the electrode. The electrode thus sunk into the center of the mass of the tumor was allowed to remain for twenty-three minutes, with a current strength ranging from 10 to 25 milliampères. The resistance to the current flow was great, owing to the fatty nature of the growth. At 25 milliampères the patient had violent palpitation of the heart and was upon the verge of syncope, owing to the presence of the electrode near the great nerve trunks. The wound being antiseptic no special dressing was applied.

February 28. Patient reports that the tumor has entirely disappeared.

May 12. Patient returned to New York from Chicago and presents herself for examination. No trace of the growth remains; a slight red spot rapidly disappearing marks the site of the puncture. Cured.

Case 3.—May 16, 1893. M. H. H., age 25; wen or dermoid cyst. Tumor began six years ago, about the size of a pea on the neck below and behind the ear. Two years ago it began to increase in size and to-day is about one inch and one-quarter in diameter. The patient decisively refuses to take an anesthesia, wishes to avoid the scar from an incision and asks to have the tumor removed by the aid of electricity. Tumor hard and movable. Treatment: Electro-cocain, local anesthesia to skin over tumor; puncture made, contents of sac mostly expressed and cavity injected with a saturated solution of iodid of potash—a non-soluble metallic electrode remaining within the sac with the solution; a current of 15 milliampères was allowed to flow for ten minutes, with the purpose of setting free the iodin and obtaining its effect in a nascent state upon the lining of the sac.

May 19. No soreness. Tumor soft and pliable but hardening.

May 22. Tumor about two-thirds of its former size.

May 23. Tumor again filled and the operation was a most obvious failure. I resolved to try another method, viz., electric diffusion from a soluble metal. This was done with 20 to 30 milliampères of current for about ten minutes.

May 31. Slight serous discharge of an orange yellow color

July 1. Patient not seen again until this date, when he returned to state that the discharge had quickly ceased and that the tumor had entirely disappeared, leaving no evidence of the operation. Seen May 1, nearly one year later, there has been no recurrence. Cured.

SYCOSIS PARASITICA.

E. H., age 50. Disease began seven years ago. Patient stated that he had tried to pull out an ingrowing hair and it broke off. A papule formed here, and following this a diffuse redness began to spread itself in all directions from the site (the left side of the face just in front of the ear); at the same time papules formed, coalesced and spread outward. No pus was formed at first but after a short time the tips of pimples became white and pus was discharged. This was followed by an exudation of serum from the excoriated surface and shortly before it was operated upon discharged in twenty-four hours one ounce of serum. He has been everywhere and tried every treatment to no advantage until last October, the 21st, when he was operated upon at the New York Post-Graduate Hospital by Dr. R. Y. Morris who removed the skin and subjacent tissue over an area in front of the ear about five and one-half inches long and two inches wide. Skin grafts were then applied which did well till one day about a week later he was out in the cold and a portion of the ears froze and had to be removed, which left when healed a scar two inches long and one inch wide in the center of the wound. All went well and the part looked healthy till February last, when signs of the old trouble began to show themselves in the skin just outside of line of incision, and when he presented himself to me the characteristic papules had spread themselves over a surface of about three inches long by two wide; in places the tissue was covered with small blebs and had a boggy appearance, into which a needle could be thrust for a distance of one-quarter of an inch without producing pain or discomfort.

April 20, he began treatment, which consisted of electric diffusion from copper electrodes 1½ to 2 milliampères ten to twenty applications, lasting in all ten to fifteen minutes, until the green oxychlorid of copper gave a distinct coloration to skin and tissue, using the positive pole, with the negative in back of neck. This was repeated eight times, the last one about May 10. The aluminium needle was used twice and the negative pole with equally successful results.

May 14. He came with the skin over lesion showing a normal and healthy condition. Treatment ceased with the injunction to return if there is the slightest evidence of recurrence.

NOTE—The alternatives in this case were, I am informed by Dr. Morris, further incision or curetting, both of which were objectionable, because the cicatrix was already extremely tense and no further tissue could well be sacrificed. The effect of the electric diffusion method was remarkable. It left behind it almost no observable cicatricial tension, in this respect much unlike ordinary electrolysis, and unlike the effects from the knife or the curette.

I have employed electric diffusion from metals in a variety of cases not here enumerated. Its action upon hemorrhoids has been to cure them in the few cases in which I have tried it. I have used it in endometritis, cystic degeneration of the cervix uteri, in ulcerations of the rectum, in keloid growths, etc. I am at present treating lupus and epithelioma with thus far favorable results, and have even begun upon a case of sarcoma, but it is too early to make any report upon this later set of cases. Dr. Gautier has reported excellent results in a great variety of gynecologic procedures and conditions.

CONCLUSIONS.

1. The salts of many metals may be electrically dissolved from metallic electrodes, and at the same time be caused to permeate human tissue to a considerable depth. In the case of copper, upon dead tissue, with a current strength equal to that employed in living tissue, this depth is visible as an apple green color, in a radius about the electrode of from one-fourth to one-half of an inch; it probably extends invisibly much further, shading off to a minimum.

2. The electrically formed and electrically diffused metallic salts are not destructive to tissue in the sense that ordinary electrolysis is; the effect is rather by the presence of a partially insoluble salt and by the effect of a newly formed organo-metallic salt, de-nutritive or absorbing upon diseased tissues.

3. It would seem to the writer that these electrically formed salts, in forming new albumin composed of the metal used as an electrode possess a selective affinity for diseased in preference to healthy tissue, or at least produce a more profound reaction upon the morbid tissue, causing a favorable alteration in the nutrition of the part.

4. Electric diffusion is greatly superior to topical applications, for the reason that the medicament is caused to penetrate the tissue acted upon.

5. This method opens up a new and interesting branch of electro-therapy.

(To be continued.)

SELECTIONS.

Antispasmin, a New Remedy for Pertussis.—Frühwald, in the *Archiv für Kinderheilkunde*, describes antispasmin (Merck) as a substance in which a molecule of narcein with sodium is united with three of sodium salicylate. It is freely soluble in water. Air and light decompose it, hence it must be kept in blue glass, well stoppered. It is expensive. The following dosage is recommended in whooping cough:

Children under 6 months 3–5 gtt. of a 5 per cent. solution three or four times a day; children of six months 5–8 gtt. of a 5 per cent. solution three or four times a day: children of 1 year 8–10 gtt. of a 5 per cent. solution three or four times a day; children of 2 years 10–12 gtt. of a 5 per cent. solution three or four times a day; children of 3 years 15–20 gtt. of a 5 per cent. solution three or four times a day; children over 3 years 10(–15) gtt. of a 10 per cent. solution three or four times a day.—*Centralblatt für innere Medicin.*

The Fate of Micro-organisms in Various Articles of Clothing.—(A. D. Nikolski, *Wojennomedizinsky Journal*, September, 1894.) The writer tries to ascertain to what extent the physical properties of materials can be regarded as favorable to the extension of the life of micro-organisms. Experiments show that in coarse, rough and porous stuffs, micro-organisms retain their vitality longer than in more compact and smoother. The explanation is that the thick and porous stuffs can absorb more moisture and retain moisture longer than thin, smooth and compact textures. Further, materials which, after infection, are exposed to light, furnish a smaller number of colonies than those which are secluded from light, and vitality ceases more quickly. These experiments were made with staphylococcus aureus, the bacterium of typhus abdominalis and the cholera bacillus.—*Centralblatt für Chirurgie.*

Review of Twenty Cholecystotomies.—C. Erasmus classified twenty cholecystotomies performed by him, as: 1, cases in which gall stones were found; 2, in which a stone was found in the ductus choledochus; 3, in which no gall stones were found. In seventeen cases the patient had suffered with a typical colic, in the others there existed a tumor, evidently of the gall bladder. A tumor was present in eleven cases in all. In one case a movable kidney caused doubt in connection with an enlarged gall bladder, but it was shown that the symptoms for which the operation was performed were produced by a stone in the ductus choledochus. In eleven cases, icterus preceded. In eight cases, enlargement of the liver was observed. In performing the operation an incision along the outer margin of the rectus abdominalis is preferred to the cross-incision along the edge of the ribs (on the right), because with the former the gall bladder can be more easily sewed to the peritoneum. He then dissects up part of the peritoneum, and draws it, funnel shaped, down to the gall bladder. Once the incision was made in the median line because complicating conditions seemed to exist. This was in the case of the movable kidney already mentioned. The operation was performed as often at one sitting as at two; the contents of the gall bladder, whether purulent or serous, seem to have caused the decision. In one case an ideal cholecystotomy was performed, yet two months later the gall bladder had to be opened again and drainage made, on account of unendurable pain. In all other cases, drainage was carried out from the outset. The secretion of gall, omitting one case where it persisted several months, continued ten days to nine weeks. In one case it was necessary to use a suture for fistula; this was successful. One patient left the hospital before the closure of the fistula and was not seen again. All the patients were again seen shortly before the publication of the work, and could bear witness to their complete recovery. In no case had a hernia resulted, and in none did death occur from the operation.

The earliest case occurred May 20, 1890, and one more operation the same year; the rest in 1891, 1892 and 1893.—*Centralblatt für Chirurgie.*

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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Henry P. Newman, Venetian Building, Chicago, Ill., sending him a certificate or statement that the applicant is in good standing in his own Society, signed by the President and Secretary of said Society. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership.

On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 86 Fifth Avenue, Chicago.

SATURDAY, MAY 4, 1895.

THE OFFICIAL PROGRAM.

The program of the forty-sixth annual meeting is now completed and was issued May 2 to the Committee of Arrangements, by whom most of the copy was furnished.

The prospect for excellent Section work was never better, and the ASSOCIATION has never had a meeting which gave plainer evidences of the high scientific standard it has lately attained.

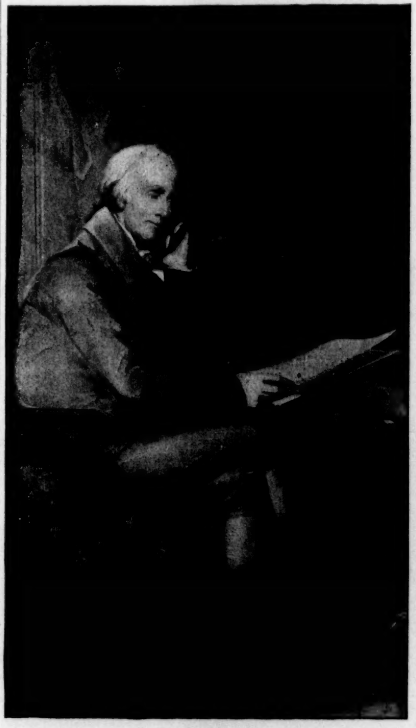
Socially the attractions are many, and the hard work done by the Committee of Arrangements shows for itself in the excellence of the arrangements for the meeting. We naturally would expect that a committee officered by CHISOLM, OSLER and ROHÉ would do credit to the Monumental City and the ASSOCIATION, and a glance at the program shows that expectation to have been well founded. Gastronomically, those inclined to the pleasures of the table will reflect that the "canvas back" has its nest very near, if it is out of season; that the succulent Chesapeake oyster has never yet been accused of conveying germs of typhoid, while the terrapin, that treasure of the *gourmet*, may always be found at its best.

Baltimore itself, with its historic associations; the chivalry of its men; the beauty of its women; the great extent and variety of its educational institutions, and its art gallery, make it a city to which the annual pilgrimage will be made with much pleasure and profit.

The program is this year printed on the ASSOCIATION presses and the work was done by ASSOCIATION employes. As a specimen of the typographical art it is very handsome, and in every detail creditable to the JOURNAL office. Justice to the employes requires mention of the fact that the copy was not received until the 24th. The printing was finished May 1.

THE RUSH MONUMENT.

At the head of our columns this week appears the portrait of the foremost American physician, DOCTOR BENJAMIN RUSH. We can do little more than reiterate the sentiments of the powerful appeal made by the Committee on the Rush Monument, to the profession; to honor the memory of an American physician, at once a scholar, a patriot, a physician and a philanthropist. It needs no eulogy to set forth his virtues or the splendor of his magnificent deeds.



DR. BENJAMIN RUSH.

From a phototype from a painting by SULLY, in possession of the Pennsylvania Hospital at Philadelphia. Painted for the hospital shortly after his death in 1813.

The history of American medicine has done that. Let those now living put their hands in their pockets in the liberal spirit that should always actuate a member of this great ASSOCIATION, and end this talk at *this* meeting, by subscribing enough money to complete a monument that should have been completed long before the ASSOCIATION was founded.

Blank Applications for membership in the ASSOCIATION at the JOURNAL office.

THE CONVULSIVE AND APOPLECTIFORM ATTACKS OF PARESIS.

The causes of the epileptiform and apoplectiform attacks of general paralysis or paretic dementia have not been adequately explained, and very few of the text-books enter into this phase of the pathology of the disease to any extent. The theory of SPITZKA that we have in the apoplectiform attacks an intense local congestion, amounting practically to a capillary hemorrhage, is a plausible one, but it only explains the mechanism, not the exciting cause. It is easy also to assume that in the more advanced cases the general inflammatory condition of the cortex of the convexity produces a state of irritability that can readily account for convulsive discharging lesions, but this, for its part, does not make clear the absolute though temporary local or general paralysis so often observed in this disease. Moreover these attacks, either convulsive or paralytic, are not so infrequently the very first manifestations of the disorder, which from the time of their appearance is plainly manifest, so that it would seem in some of these cases to have actually dated from the attack. Any prior symptoms, if they existed, were too insignificant to attract attention, and cases have occurred where friends or the patient could not recall any pre-existing aberrations from the normal condition, that could rationally be connected with the seizures or the succeeding paresis.

In a recent communication a prominent French alienist, M. LEGRAIN, endeavors to supply a probable hypothesis to account for the phenomena in question, by assuming a uro-toxemia of the blood, and claims that those paretics who are free from these attacks are those only who retain to the last the full functional activity of the kidneys. On these grounds he maintains that paretic dementia is not exclusively a disease of the brain and nervous system, but that its lesions are also to be sought in the viscera, and in the arterio-sclerosis which forms their common bond. He draws, moreover, a practical conclusion from these views, that free abstraction of blood by leeching is a useful therapeutic measure, relieving the system of the toxic products that are overwhelming the brain; and claims to have had practical demonstration of this fact.

While there is a certain degree of probability in M. LEGRAIN'S views, it can not be said that they are proved to be applicable in all cases of the convulsive or paralytic attacks of paretic dementia. There is, with the increasingly favored view of the syphilitic or at least the parasyphilitic nature of paresis, a strong suggestion of a specific toxin acting in these cases. When the attacks occur, as they do in some instances, after comparatively recent syphilis and the disorder falls under the head of what has been called syphilitic pseudo-paresis, there is no difficulty in the assumption of the action of such a toxin. Syphilographers have long since recognized the possibility of the sudden overwhelming, in some cases, of the nervous system by the specific poison, and this is one of the ways it might very naturally demonstrate its presence. When, however, as in most cases of paretic dementia, the specific infection dates back some years and has since been quiescent, to say the least, with our present knowledge, the probability of a specific toxin may seem more remote, but the idea can not be absolutely discarded, until we know more positively the actual relations between syphilis and paresis. The directly acting cause of the attacks may easily be a vasomotor disturbance, but the origin of this is the question, and the action of some poison on the governing centers seems as probable a theory as any other,

The toxin theory, whether as proposed by M. LEGRAIN, or in other forms, has the advantage of being in accord with one of the leading lines of thought in pathology at the present time and seems, on the whole, to be as well supported by facts as any other. It has moreover, so far, the field to itself, as no other adequate one has been seriously advanced and supported.

VARIOLA AND VACCINIA.

At the close of the Jennerian century the question of the relation between variola and vaccinia is still unsettled, and DR. AUSSET and M. BARRET have just furnished another interesting chapter to the controversy. In view of PASTEUR'S discoveries the majority of savants believe that immunity against variola, as it is against anthrax, is obtained by the modification of the virulent elements attenuated by cultures or by their passage through animal organisms. But since the development of the anthrax bacillus may be stopped by the presence of another microbe—the bacillus pyocyaneus—is there not some analogous action in vaccination against variola?

The experiments of the authors have been guided by these ideas. As far back as 1839, REITER had inoculated more than seventy cows with variola unsuccessfully; on the other hand, vaccinia throve on these animals. In 1865 PROFESSOR CHAUVEAU reported some very interesting facts to the Academy of Medicine which are known to all. CHAUVEAU concluded that the two viruses are absolutely independent. In 1883 BERTHEL, of Lyons, repeated CHAUVEAU'S experiments by the intra-venous method. At the same time WARLOMONT, of Brussels, made similar experiments and reached the same conclusions as BERTHEL. Neither by intra-venous nor by intra-cellular injections were they able to produce an eruption having the character of the variolic pustule or the vaccinic pustule. The works of ETERNOD, HACCIUS and BOLLINGER have not modified CHAUVEAU'S conclusions. Others, however, have reserved

their judgment on this question—among them NIEMEYER, KUSSMAUL and STRUMPELL, DUPUY and JUHEL-RENOY. In their second chapter, MM. AUSSET and BARRET cite experiments tending to show the identity of vaccinia and of variola. In 1830 CEELEY and afterward THIELE obtained the transformation of variola into vaccinia. In 1882 VOIGT obtained in three cases the same results as the Lyonese Commission, but he interpreted them differently and saw in the experimental eruption an abortive form of variola-vaccinia. VISCHER in 1886 argued that vaccinia is nothing but a modification of the variola virus. HIME, of Bradfort, also believed this to be the case.

The experiments of the authors consisted of four series: 1, variolation and vaccination on separate heifers; 2, variolation and vaccination simultaneously on the same animals; 3, vaccination of the animals inoculated with variola and inoculation of the vaccinated animals with variola; 4, M. AUSSET, successfully vaccinated in 1890, was inoculated on both arms with lymph from variola—no result; and again, eighteen days after vaccination, with lymph from a heifer—no result. The experiments confirmed CHAUVEAU's ideas; one alone seems discordant: A woman of 33, in the hospital at Limoges for cardiac disease, was vaccinated with the other patients in April. A week after, she presented six characteristic swellings with the usual phenomena of vaccinia. On April 16 she felt a chill, followed on the second day after by vomiting, headache and fever. Finally, on the 21st, an eruption of variola appeared which ran its usual course. This was not general vaccinia—error, it was claimed, was not possible.

DEFENSE OF OPIUM EATING.

Having regard to the attitude of Great Britain in other matters affecting her commercial interests—quarantine, for example—the medical world, outside of the "right little, tight little island," will be inclined to look askance upon the conclusions of the Royal Commission, on the use of opium, just made public. We are told that the inquiry of the Commission was conducted on a wide scale and the decision was practically unanimous; that more than 720 witnesses were examined, including 152 called at the desire of the Anti-Opium Society; that every care was taken to obtain representative testimony, and that the Commission record their conviction that the evidence forms trustworthy ground for the conclusions reached.

And these conclusions are: "That the temperate use of opium in India should be viewed in the same light as the temperate use of alcohol in England. Opium is harmful, harmless, or even beneficial, according to the measure and discretion with which it is used."

Taken by itself, and with its qualifying phrases "temperate use," "measure and discretion," this declaration might be regarded as harmless; it would mean much or little, more or less, to different individual judgments. Unfortunately, it does not stand alone; the drift of all the extracts of evidence published is in favor of the use of opium as a stimulant. "In the opinion of the great majority of native medical practitioners and representatives of large influential classes, this employment of the drug is attended by beneficial results. Opium eaters of fifteen to twenty years' standing appeared before the Commission. They believed the habit had done them good. Their appearance and vigor satisfied the Commissioners, at all events, that it had done them no perceptible harm. . . The opium habit prevails among some of the most manly, hardworking, thrifty races of India. . . Opium is consumed in the native army, and, the witnesses say, does no perceptible harm, and is often beneficial. . . Opium does not appear to beget any specific disease. Opium eaters bear surgical operations as well as non-consumers, and the manager of a large insurance company said that after twenty years' experience, his company charged no extra premium on the lives of moderate opium eaters."

Exact figures as to the present value of the opium export from Bombay are not at hand; but it formerly amounted to some $60,000,000 annually, of which about $37,500,000 represented net profit to the government. Of late years there has been a relative if not absolute decline in the amount exported. But this of course has had nothing to do with this defense of opium for "moderate habitual use," by a Royal Commission.

"A STANDARD POPULATION."

The Registrar-General of England, according to *Public Health* for March, has recently emphasized the necessity, or desirability rather, of a standardizing of the population of the several European countries. By this is meant that, for international uses, there shall be population with fixed age and sex distribution so that the birth rates and those of deaths and marriages may be calculated by such a standard or "norm." It is pointed out by him that as the sex and age distribution of the population varies markedly in different nations, and as the rates largely depend upon such distributions, the rates in one country can not safely be compared with the rates in another, without correction for these differences in the constitution of the several compared populations.

A high birth rate, for a time at least, increases the death rate, but in ten or fifteen years, if there is no considerable emigration of young persons, the death rate will diminish, inasmuch as there will then be a large proportion of persons between the ages of 5 and 25 years during which age periods the incidence of mortality is at its lowest. Again, a population that has

a large proportion of elderly persons will, other conditions being equal, have a higher death rate than a population having fewer aged people.

"PRIVATE COLLEGES."—The dislike to give credit to a rival publication, which is an idiosyncrasy of some editors, occasionally causes a comical evasion. Thus, an English contemporary, using the JOURNAL'S elaborate statistics of Medical Colleges and Medical College Attendance in the United States[1], has the following item: "In 1892 there were 15,339 medical students in 98 public colleges in the United States, and nearly 18,000 in the 117 public and private colleges. In 1894 the number had risen to 17,701 in the public colleges and 21,186 in the public and private." The JOURNAL does not understand the distinction here made between "public" and "private" colleges. What the JOURNAL said—page 992, Dec. 29, 1894, was that, "Through the courtesy of the Deans and Registrars of 98 out of the 117 existing regular medical colleges in the United States and Canada," etc.[1] The classification of these schools into "98 public colleges" and "19 private colleges" gives an air of originality to the item, to which the editor is entirely welcome.

CORRESPONDENCE.

Handwriting of the Insane.

PHILADELPHIA, PA., April 18, 1895.

To the Medical Profession:—With a view to especially important scientific results, I am studying the handwriting of the insane; and request your aid by way of the loan of documents, letters or written memoranda, or information having bearing upon the subject.

My especial desire is to obtain a given form of letter from ten persons, suffering from different degrees of insanity, such as melancholia, hallucination, paresis, etc., any and all writing that will be of interest in the investigation.

In return for your kindness and help, I will forward to you, free of charge, a full and complete report, together with drawings, diagrams, etc., embracing a full description of my work, which will be of use, help and value to not only the medical fraternity, but to humanity in general.

Please note on each specimen of writing, the duration of the malady or disorder, together with any miscellaneous information which you feel will be of aid to the purpose in view.

All information sent will be held sacredly confidential.

Very respectfully yours,

RUFUS C. HARTRANFT.

Fifty Years in one Place.

CLYDE, N. Y., April 30, 1895.

To the Editor:—As you seem to desire, for some purpose, the photographs of the members of the ASSOCIATION I send mine with the announcement that the past winter completes my fifty-first year in practice—fifty years of married life, and fifty years residence in the same house.

If any member of the ASSOCIATION can boast of as many semi-centennial anniversaries of a like character, I would like to see his name in print.

I also became a member of the ASSOCIATION at its meeting in New York City in 1864, the year of the election of its veteran founder, Dr. Davis, as President.

Yours truly, D. COLVIN, M.D.

[1] JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Dec. 29, 1894; Jan. 12, 1895.

SOCIETY NEWS.

Ophthalmic Instruments.—A table will be provided in the meeting room of the Section on Ophthalmology, for the purpose of exhibiting new instruments or preparations that have been invented or brought forward by members of the Section. H. V. WURDEMANN, Secretary.

License to Practice in Pennsylvania.—The State Board of Medical Examiners, representing the Medical Society of the State of Pennsylvania, will meet in Philadelphia, corner of Broad and Pine Streets, and in Pittsburg, Council Chambers, on Tuesday, June 18, 1895, at 2 P.M., to examine applicants for license to practice medicine in Pennsylvania. Blank applications and all necessary information can be obtained from the Secretary of Internal Affairs, Harrisburg, Pa.

H. G. MCCORMICK, M.D., President of Board.

Windham County (Conn.) Medical Society.—Sixteen towns, representing the leading practitioners in each township, met in Windham, Tuesday, April 23, for the one hundred and second annual meeting of the Windham County Medical Society. The following officers were elected: President, F. A. Morrill, Putnam; Vice-President, F. E. Guild, Windham; Secretary, W. H. Judson, Wauregan; County Reporter, N. Hibbard, Danielsonville; Censors, Lowell Holbrook, Thompson, T. M. Hills, Willimantic; E. H. Davis, Plainfield, Fellows to Connecticut Medical Society meeting at Hartford, May 25: Chairman, C. J. Fox, Willimantic; J. Kent Putnam; S. B. Overlock, Pomfret; C. E. Hill, Killingly; L. Holbrook, Thompson; alternates, T. R. Parker, Willimantic; Omer LaRue, Putnam; J. H. Tanner, Brooklyn; W. A. Darling, Killingly; W. H. McIntosh, Thompson. Delegates to AMERICAN MEDICAL ASSOCIATION in 1896: T. M. Hills, Willimantic; E. A. Hill, Killingly; essayist, A. D. David, Willimantic; alternate, R. C. White, Willimantic. Delegates to various county medical associations in 1896: C. J. Fox, Hartford; J. B. Kent, New Haven; F. A. Morrill, New London; F. E. Guild, Litchfield; E. H. Davis, Tolland; W. H. Judson, Middlesex; T. R. Parker, Fairfield. The annual essay was read by Dr. W. H. Judson, on "Dosimetric Medication." It was a very interesting paper and called out general discussion. An obituary on the death of the late Dr. W. J. Lewis, of Moosup, was read by Dr. Davis, of Plainfield, and appropriate resolutions were passed. The following new members were elected: Dr. G. A. LeClarr, Danielsonville; Dr. W. J. McIntosh, Thompson; Dr. S. B. Oldershaw, Pomfret. Dr. J. A. Coogan, of Hartford, was present as delegate of the Hartford County Medical Society. It was voted to hold special meetings at Pomfret in June and at Danielsonville in September, and the next annual meeting at Putnam. The annual dinner, at the Hooker House, was an interesting feature of the meeting.

An Appeal to the Medical Men of Illinois.—The Executive Committee at a recent meeting decided to issue an appeal to the physicians of the State of Illinois, through their different medical societies and through individual members of the profession, urging upon them the necessity for prompt organization of the profession in the State. It is a fact that the State Medical Society of Illinois has fewer members than the State societies in other States, with perhaps two or three exceptions, This is due, no doubt, to the apathy of the profession in the matter of organization. The medical profession of this State can advance their interests in no surer way than by speedily forming themselves into compact societies, county, State and National, under the authority of the organizations already established; and the committee respectfully urge that every member of the regular profession in this State see to it that he is speedily enrolled as a member of the State Society. There are over seven thousand physicians in the State, and less than seven hundred members of our society. What wonder is it that a request of the

profession, as voiced through the State Society, receives so little attention at the hands of our Legislature? But let the Legislature once be apprised that the profession of our State are united, and that they request the passage of a certain measure in the interests of public health, of humanity, or of the profession, and it will be very speedily responsive to such request. Not only are these material interests best subserved by organization, but as well the science in which we are all working, which requires that those engaged in the same department of science shall frequently compare notes and transmit the result of their observations to their fellows through the regular channels of communication. Will you not, dear Doctor, aid in this great work of organization and become one in the active ranks of those who are enlisted in the cause of scientific advancement? The cost is but a trifle—the reward is great. *Send your name and formal application for membership to the Secretary of this Society, or to the Treasurer, as soon as possible.* It is not absolutely necessary that you shall attend the meeting. Your name, your influence, and your support, and such contributions as you may from time to time choose to publish in the Society Transactions, are necessary in order to give the medical profession of Illinois the same prominence, character and respect as is accorded to our profession in most of the other States in the Union. State pride as citizens, no less than professional pride as physicians, should induce all members of the regular profession to at once enroll themselves as members of the organized State Medical Society, and if need be to make some sacrifices to that end.

JOHN B. HAMILTON, Permanent Secretary.

Association of Military Surgeons.—The fifth annual meeting of this body will be held at Buffalo, N.Y., May 21 to 23, 1895. The general headquarters will be at the Iroquois Hotel, where provision will be made for registration. The Committee of Arrangements has provided for the entertainment of the members and their friends. On the evening of Tuesday, May 21st there will be a conversazione at headquarters; on Wednesday a reception; on Thursday a carriage drive to various points of interest in the city, a promenade concert and a review of the 65th Regiment N. G. N. Y. On Friday, leaving Buffalo at 9:30 A.M., there will be an excursion to Niagara Falls and probably on to Fort Niagara, to afford the members an opportunity of seeing the various points of interest at the great cataract, including the electric power plant, the battle grounds of Lundy's Lane, Queenstown Heights and other interesting places. Members are expected to be in undress uniform during the day and in full dress, including side arms at evening entertainments. In connection with the meeting there will be an attractive exhibition of surgical instruments, dressings and appliances in which most of the leading houses of the United States will be represented. Addresses of welcome will be made by Hon. Edgar B. Jewett, Mayor of the city, Hon. Levi P. Morton, Governor and Commander-in-Chief of the National Guard of the State of New York, and by Dr. Roswell Park, President of the State Medical Society. Major Albert H. Briggs, N.Y. N.G., is Chairman of the Committee of Arrangements. The following papers have been promised for the meeting: The President's address, by George M. Sternberg, Surgeon-General, U. S. Army. Report on the Status of the National Guard, by Colonel Nelson H. Henry, Assistant Surgeon-General, N. Y. N. G. Experiments illustrating the degree of powder burn, as modified by the distance of the object, size and conformation of the bore, amount and standard of the powder and other practicable demonstrable causes, by Louis A. La Garde, Captain and Assistant Surgeon, U. S. Army. The location and removal of missiles from the cranial cavity, by George R. Fowler, Major and Surgeon, N. Y. N. G. On litters, by John Van R. Hoff, Major and Surgeon, U. S. Army and E. T. T. Marsh, Major and Surgeon, 71st Regiment, N. Y. N. G. Ambulance construction, by Dallas Bache, Colonel and Assistant Surgeon-General, U. S. Army and C. R. Greenleaf, Lieut.-Colonel and Deputy Surgeon-General, U.S. Army. Conservative surgery on the battle-field, by Colonel Nicholas Senn, Ill. N. G. The relation of concentrated food to active service demands, by Charles Smart, Major and Surgeon, U. S. Army. The location of sites for, and the construction of military posts in relation to proper sanitation, by Dallas Bache, Colonel and Assistant Surgeon-General, U. S. Army. The relation of naval architecture to proper sanitation, by J. R. Tryon, Surgeon-General U. S. Navy. On the value of bromin in military surgery, by M. O. Terry, Surgeon-General, New York. The handling and care of wounded on shipboard, by A. C. H. Russell, E. R. Stitt and A. M. D. McCormick, Passed Assistant Surgeons, U. S. Navy. The post exchange from a medical standpoint, by Philip F. Harvey, Major and Surgeon, U. S. Army. Infected bullets, by Louis A. La Garde, Captain and Assistant Surgeon, U. S. Army. Fifty-two amputations of the thigh, by John D. McGill, Surgeon-General, New Jersey. Instruction of the Hospital Corps, by H. S. Turrill, Major and Surgeon, U. S. Army. The surgeons-general of the militia, by George Cook, ex-Surgeon-General, New Hampshire. Field hospital service, by Dallas Bache, Colonel and Assistant Surgeon-General, U. S. Army. Some experimental work with the new ball, J. D. Griffith, ex-Surgeon-General, Missouri. Gunshot wounds of the kidneys, by A. L. Wright, Lieut.-Colonel and Surgeon, Iowa N.G. On the travois litter, by Vladimir F. De Niedman, Major and Surgeon, Kan. N. G. Service of the National Guard of the State of New York during the Buffalo strikes of 1893, by Lewis Balch, Major and Surgeon N. Y. N. G. The National Guard of the State of New York during the recent Brooklyn strikes, by William E. Spencer, Major and Surgeon, N. Y. N.G. Service of the Illinois National Guard during the Chicago strike, by Charles Adams, Major and Surgeon, Ill. N. G. Method of caring for wounded on the field and in hospitals of Chinese and Japanese armies, by C. U. Gravatt, Surgeon U. S. Navy. Scorbutic manifestations in young subjects, by John C. Wise, Surgeon, U. S. Navy. Asepsis in military service, by Eduard Boeckmann, Assistant Surgeon-General Minn. N. G. A medical officer in the volunteer army, by F. W. Byers, Surgeon-General, Wisconsin. The Merriam pack, by Lewis Balch, Surgeon, N. Y. N. G. The prevention and suppression of dangerous contagious diseases in garrison and in the field, by H. Lincoln Chase, Assistant Surgeon, Mass. V. M. Heat and sunstroke at camps of instruction, by Orlando J. Brown, Mass. V. M. The mental evolution of the citizen soldier, by Charles W. Galloupe, Assistant Surgeon Battery A, Mass. V. M. A diagnosis tag for field use, by Wm. H. Forwood, Lieut.-Colonel and Deputy Surgeon-General U. S. Army. Some interesting papers also are expected from committees appointed at the meeting in Washington, D. C., last year.

International Congress of Dermatology.—The Third International Congress of Dermatology will be held in London, August 4 to 8, inclusive, 1896.

Officers: President, Jonathan Hutchinson. Vice-Presidents, (*a*) British: the President of the Royal College of Physicians; the President of the Royal College of Surgeons; the President of the Royal College of Physicians of Ireland; the Director-General of the Medical Department of the Navy; the Director-General of the Medical Department of the Army. Sir William H. Broadbent, Bart.; Sir Joseph Lister, Bart.; Sir James Paget, Bart.; Sir Richard Quain, Bart.; Sir Dyce Duckworth; Sir Douglas Maclagan; Sir Edward Sieveking; Mr. Alfred Cooper; Drs. G. F. Duffey, McCall Anderson, Hughlings Jackson, Allan Jamieson, Robert Liveing, Payne, Pye-Smith, Herman Weber, Wilks.

(*b*) Foreign: France, Dr. Besnier, Professor Fournier, Dr. Hallopeau, of Paris; Professor Leloir, of Lille.

Germany: Professor Köbner and Professor Lassar, of Berlin; Dr. Unna, of Hamburg; Professor Neisser, of Breslau; Dr. Veiel, of Cannstadt.

Austria: Professor Kaposi, Professor Neumann, Professor Lang, Professor Hans von Hebra, of Vienna; Professor Schwimmer, of Buda-Pesth; Professor Pick and Professor Janovsky, of Prague; Professor Jarisch, of Gratz.

Russia; Professor Petersen and Professor Tarnovski, of St. Petersburg; Professor Pospelow, of Moscow.

Italy: Professor de Amicis, of Naples; Professor Pellizari, of Florence; Professor Campana, of Rome.

Norway: Professor Boeck, of Christiana.

Denmark: Professor Haslund, of Copenhagen.

Professor Castello and Professor Olavide, of Madrid.

Balkan States: Professor Kalindero, of Bucharest.

Turkey: Zambaco Pacha.

Greece: Professor Joannu, of Athens.

United States: Dr. L. A. Duhring, of Philadelphia, Pa.; Dr. White, of Boston; Dr. J. Nevins Hyde, of Chicago; Dr. L. D. Bulkley, Dr. E. L. Keyes and Dr. Fox, of New York.

Canada: Dr. F. Shepherd, of Montreal; Dr. Graham, of Toronto.

Treasurer, Mr. Malcolm Morris. Executive Council: Chairman, Mr. Hutchison; Vice-Chairman, Dr. Colcott Fox.

Members: Drs. McCall Anderson, Brooke, Fitzgibbon, A. J. Harrison, Allan Jamieson, Payne, Perry, Sangster, Pye-Smith, Simon, Walter G. Smith, Stowers, Thin. Messrs. William Anderson, Alfred Cooper, Ernest Lane, Sheild, Shillito, Waren Tay. Ex-officio members: chairmen of committees, the Treasurer, the Secretary-General.

Committees: (*a*) Reception, Chairman, Dr. Radcliffe Crocker. Members, Drs. Brooke, Colcott Fox, Keser, Bowles. Mr. Lane, Mr. Sheild.

(*b*) Museum and Demonstration, Chairman, Dr. Stephen Mackenzie. Members, Dr. Abraham, Messrs. William Anderson, Hutchinson, Jr.; Drs. Perry, Stowers; Mr. Tay.

(*c*) Bacteriological, Chairman, Dr. Sims Woodhead. Members, Drs. Délépine, Galloway, Manson, Ruffer, Thin; Mr. Andrew Pringle.

Ex-officio members of all committees: the President, the Treasurer, the Secretary-General.

Secretary to Section for Syphilis, Mr. Ernest Lane.

Foreign Secretaries:

France, Dr. Feulard, of Paris.

Germany, Dr. Rosenthal, of Berlin; Dr. Taenzer, of Bremen.

Austria, Dr. Riehl, of Vienna.

Belgium, Dr. Dubois Havenith, of Brussels.

Denmark, Dr. Nielssen, of Copenhagen.

Hungary, Dr. Török, of Buda-Pesth.

Portugal, Dr. Zeferino, Falcao of Lisbon.

Holland, Dr. Van Haren Nomann, of Amsterdam.

Sweden, Dr. Welander, of Stockholm.

Switzerland, Dr. Müller, of Zurich.

Italy, Professor Tommasoli, of Modena.

Spain, Dr. Padro, of Madrid.

Roumania, Dr. Petrini de Galatz, of Bucharest.

Agentina, Dr. Baldomero Sommer, of Buenos Ayres.

Australia, Dr. Finch Noyes, of Melbourne.

Egypt, Dr. Sandwich, of Cairo.

United States, Dr. George T. Jackson, of New York.

Brazil, Dr. Silva Araujo, of Rio de Janeiro.

Chili, Dr. Valdés Morel, of Santiago.

China, Dr. Neil Macleod, of Shanghai.

West Indies, ——

Secretary-General, Dr. J. J. Pringle, 23 Lower Seymour Street, London, W.

REGULATIONS.

1. All duly qualified medical men, British or foreign, or others interested in science, invited by the Council, who shall have paid the fee of £1 sterling,[1] and who shall have enrolled themselves, shall be members of the Congress and entitled to the Volume of Transactions.

2. The official languages of the Congress shall be English, French and German, but with the permission of the President, members may express themselves in the language with which they are most familiar.

3. The proceedings of the Congress shall be embodied in a Volume of Transactions, edited by the Executive Council.

4. Communications relative to membership, papers, or other matters connected with the Congress, should be addressed to the Secretary-General, Dr. J. J. Pringle, 23 Lower Seymour Street, London, W., or to one of the Foreign Secretaries.

5. The fee for membership shall be payable in London, at or before the opening of the Congress.

It will greatly facilitate the work of the Executive if the fee is forwarded as soon as possible after May 1, 1896.

6. Members who are unable to attend the Congress shall receive the Volume of Transactions.

7. The subjects treated shall be of two orders: 1, those selected beforehand by the Executive Council and introduced by gentlemen chosen for that purpose by the Council; 2, those selected by individual members themselves.

8. Subjects selected for debate by the Council shall take precedence over those selected by the members.

9. The sittings of the Congress shall take place from 11 to 1 in the forenoon, and from 3 to 5 in the afternoon, of each day.

10. There shall be clinical demonstrations of patients every morning from 9 to 10:30, and every afternoon from 2 to 3.

11. Members contributing papers must submit an abstract of them to the Secretary-General on or before May 1, 1896, which will be printed either in full or in part, and embodied in the general program of the Congress which will be distributed at its opening.

12. At every debate, precedence will be given to gentlemen who have communicated beforehand their intention to take part in it.

13. No papers lasting more than twenty minutes will be permitted. Speeches will be strictly limited to ten minutes each. MSS. of the papers read must be left with the Secretary-General before the end of the sitting. The Executive Council shall decide as to the entire or partial publication of such papers in the Transactions of the Congress.

J. J. PRINGLE, Secretary-General.

[1] The equivalent of £1 sterling is: French, 25 francs; German, 20 marks; Italian, 25 lire; American, 5 dollars.

Chicago Ophthalmological and Otological Society.—Regular meeting held at Saratoga Hotel, March 12, 1895, DR. HOTZ in chair. There were sixteen members and visitors in attendance.

The minutes of the last meeting were read and approved.

DR. GAMBLE showed a case of voluntary nystagmus. Patient was a man, 24 years old, always well. No eye trouble in family. Could voluntarily cause a marked lateral nystagmus by looking at an object about ten feet away. The movements are more rapid than in most cases of involuntary nystagmus. The movements last only about a minute and then another effort is necessary to call them forth. V. in each eye =20-20; no asthenopia; never had headaches; fundi normal. The nystagmus is never involuntary.

DR. COLEMAN showed a negro porter about 28 years old, first seen some months ago, with marked secondary syphilis and with papillomata on corneal limbus. All symptoms disappeared under mixed treatment, but patient left before cured. Now returns with another outbreak and papillomata on limbus and on upper lid. They are sharply defined, about 1 millimeter in diameter. Much photophobia and lacrymation.

DR. DODD reported a case of corectopia and notching of both lenses. Mrs. S., age 35 years. Right pupil is displaced upward and inward; left is normal in position and reaction; both irides tremulous; both lenses displaced downward and backward and irregularly notched in upper part, this being due to lack of zonule at these points. Vision each eye = fingers at three feet; right with — 16. D = 20-200; left not improved with glasses because of choroidal atrophy. She has a brother with double corectopia.

DR. HOTZ had seen a case where both lenses were dislocated upward and the lower border of each was notched.

DR. PINCKARD had a case where both lenses were dislocated down and in, and the upper border of each had a smooth notch about 1 millimeter deep.

DR. HOLMES had seen a case with Dr. Kipp, of Newark, where there was a notch both above and below.

DR. CASEY WOOD read a paper on "Septic Embolism of the Retinal Arteries," and reported two cases. The first was puerperal, both eyes were lost by panophthalmitis but the patient did not die. In the second case only one eye was lost. As a rule where the general sepsis is marked, the trouble in the eye precedes death only a short time.

DR. HOTZ thinks such cases must be rare because during service in a general hospital, he had seen a great deal of pyemia but never a case of septic embolism in the eye, except one case from puerperal cause.

DR. COLEMAN had had two cases in both of which death had occurred shortly after panophthalmitis set in.

DR. WESTCOTT had two cases in which death occurred and one where the eye trouble started while the patient was convalescing from pneumonia. The eye was enucleated and patient recovered.

DR. COLBURN had a girl, 17 years old who in December, 1894 had tonsillitis with ulceration. During this time she became blind. First seen three weeks later. Marked neuroretinitis with hemorrhage which has slowly cleared and now V= 20-60. Dr. Colburn also showed a water color of an unusual form of albuminuric retinitis. He reported a case of girl injured two years ago; Now, O. S. V= ½; field about one-fourth size of normal; loss of sense of smell and taste; hearing about one-ninth; monocular diplopia. O. D. V= 20-20; field is normal. There is anesthesia of right arm and left leg.

DR. COLEMAN thought there might be some organic lesion.

DR. GRADLE thought it was a typical case of hysterical amblyopia as described by Charcot. Prognosis is bad.

DR. WOOD also thought it was hysteria and prognosis is bad.

DR. HOTZ thought a normal fundus after two years was against an organic lesion.

DR. WILLIAMS referred to a recent case in *New York Med-*

ical Record. Boy, 11 years, had neuro-retinitis and at the time his color sense was much disturbed. After neuro-retinitis disappeared color sense became normal. Dr. Williams thought this suggested that the retina was the seat of change in abnormal color vision.

Dr. Hotz had a strong man, 28 years old, who on August 27, about 10 A.M. found right eye suddenly blind. About ten minutes later, could see light. Dr. Hotz examined him about 12 o'clock. Lower field gone and upper field contracted. Retina was hazy above macula, the haze having a sharp edge. Superior artery was large to first branch, from there on was empty. Next day marked edema of retina above and vessels very small. Third day, a hemorrhage in upper nasal part. Massage was employed every day. Patient disappeared but came under Dr. Wood's care some days later. Massage continued and an iridectomy done. Field increased in size and central vision = 20-20. Vessels continued thread-like.

Dr. Pinckard had seen a case of embolism of the superior artery where the embolus did not entirely occlude the vessel and the blood moved slowly along in a broken column. On the third day the arterial circulation was completely restored. At no time was the blood column in the veins broken. There was marked edema of retina but no hemorrhages. The patient recovered entirely without treatment.

On motion, Society adjourned.

C. P. Pinckard, Secretary.

103 State Street.

NECROLOGY.

John P. Wall, M.D.—The Editor has received from a mutual friend, the following statement of the sudden death of the late Dr. John P. Wall, of Tampa, Fla., long a member of our Association, and a gentleman of high standing in his community and State. The record of his service during the Tampa yellow fever epidemic, in which he served faithfully as one of Surgeon-General Hamilton's assistants, having immediate charge of affairs in Hillsborough County, is a bright chapter in sanitary annals. As will be seen, his death occurred while reading a paper on hygiene before the Florida State Medical Association:

"Perhaps the electric spark has already conveyed to you the sad intelligence of Dr. Wall's sudden death. If it has, then I am late in my announcement but not late, I know, in giving you some of the details of the unhappy ending of one of Florida's brightest and most illustrious physicians. He truly died in harness and was at labor in his chosen and loved profession up to the very moment when the summons came. The Florida Medical Association was in annual session at Gainesville and it was the third day of the session. Dr. Wall had been announced in the Section of Hygiene to read a paper on "Public Health in the Light of Recent Observations and Experiments," and 9:30 A.M., the 18th instant had been made the special hour and order for its delivery. The Doctor was a little late getting to the hall, having been to see some patients with Dr. Lancaster of Gainesville, but he arrived before the appointed hour. He appeared in his usual health that morning and in fact said to some friends that he never felt better. He began reading, standing, but appeared much agitated and very nervous, as was manifested by a restless moving of his right hand, he holding his article—which was in printed proof-sheet in his left hand. He was pale and his voice trembled, which I in common with other members ascribed to a timidity (stage fright) which the Doctor always manifested when addressing an audience. He had read but a few sentences when he sipped water and then seemed to recover his self-possession, but the agitation returned soon again with increased pallor and he again drank water, remarking *sotto voce* to those near him that "high teas" and "tony" entertainments did not agree with him (alluding to the reception of the night before) but he did not complain otherwise, then, of feeling badly. It was soon apparent (in fact I noticed it as soon as he began his paper, and remarked the fact to Dr Daniel sitting in front of me) that there was something wrong with the Doctor, and Dr. Caldwell called to him to take a seat. He seemed to understand and reached for a chair near by him, but sitting on the arm of the chair and slipping off, he fell on the floor. He gasped several times, had a convulsive twitching of the corner of his mouth, and hands, and was dead. As he fell the pallor was changed to venous congestion of face and neck and a very few minutes after death was pronounced, his ears and back of neck were very decidedly blue. I judge he had been reading about eight or ten minutes when he died. There was no post-mortem as but an hour or two remained to perfect arrangements to take the body home in time for the train.

"The shock was a great one to us all, and I think it is the first occasion (the first that I know of) where a medical man in a medical convention and reading a medical paper drops dead and, as I said at the beginning of my letter, he truly died in harness. He never spoke after he stopped reading and made an effort to be seated." Yours truly,

Joseph Y. Porter, M.D.

John Blackmer, M.D., of Springfield, Mass., died April 15, aged 67 years. He was born in Plymouth, and was graduated in medicine at Harvard University in 1854. In the late war he served as surgeon with the Forty-seventh Massachusetts Volunteers, whence he was transferred to a position as assistant surgeon in the U. S. Navy. After the war he became superintendent of the New Hampshire Asylum for the Insane. He was prominent in prohibition politics, both in the State last named, and later in Massachusetts.

Elon J. Lawton, M.D., of Rome, N. Y., died April 18, in his sixtieth year. He was a graduate from the Albany Medical College, in the class of 1858. For the past four or five years he had been a member of the common council of the city named, and formerly for the period of twelve years ending in 1882 he had been the coroner of Oneida County.

Joseph L. Wade, M.D., of Irvington, N. J., died April 20, aged 66 years. He was graduated in medicine at the New York University, when he was 21 years of age, and soon thereafter established himself in practice in his native town. He had been health officer of the village for ten years, and was one of the best known citizens, having been born in the township at the outskirts of the old village, and lived there constantly except during the four years he served as a surgeon in the Thirteenth New Jersey Volunteers at the front. He was a steady contributor to the Newark papers, and at one time published a paper called the *Irvingtonian*. He leaves a widow.

Joseph Rowland, M.D., the oldest practicing physician in Delaware County, died at his home on Front Street, Media Pa., April 29, with pneumonia. He was in the eighty-first year of his age and had been in active practice in this county for fifty-five years. He was a graduate of the University of Pennsylvania of the class of 1840. His entire life was given up to practice, and he leaves considerable property. He was a man wonderfully preserved for his years and was seen almost daily riding on horseback, his usual mode of travel. Dr. Rowland was twice married, his first wife, who died about twelve years ago, being Jane R. Eaves. Six children from this marriage are living, all married and heads of families. They are Dr. Frank Rowland, Dr. Beecher Rowland, Mrs. Mary Kater, Mrs. Charles Myles, all of whom reside in California, and William E. Rowland of Media, and Mrs. Sarah Garrett, of Westtown. Four years ago Dr. Rowland married his second wife, Anna Howard, of Media, who survives him. He had a wide acquaintance and many family connections in the county, and was held in high esteem, both as a citizen and a physician.

Isaac Wayne Hughes, M.D., died at his home in Philadelphia, April 26. He was the second son of Benjamin B. Hughes, and was born in 1831, near Norristown, Pa., where he received his early education. He had among his schoolmates and intimate friends of early youth the late Generals W. S. Hancock and John F. Hartranft. He entered the medical school of the University of Pennsylvania in 1849, and was graduated in 1852. He began the practice of his profession at Sunbury, Pa., where he married Alice, daughter of the late Judge Charles Donnel, and, after a short residence there, in the year 1851, he settled in West Philadelphia, then a scattered village, locating at Fortieth and Chestnut Streets, where he continued to reside, actively engaged in

the practice of his profession, until prostrated by his fatal illness, which confined him to his bed since about March 1. Dr. Hughes was not only a successful practitioner of medicine endeared to his large clientage, not only for his skill and experience, and also by a pleasing personality of manner, but he was likewise an enterprising business man, and assisted in the improvement of that part of the city by the erection of a number of dwelling houses. He also organized the West Philadelphia Bank in 1869, of which he was the first and only President, and was also the President of a recently organized incinerating company. He had been for many years a member of the Philadelphia County Medical Society, and had been for a period of forty years a vestryman of St. Mary's Protestant Episcopal Church.

He numbered among his personal friends such distinguished men as the late Anthony J. Drexel, Chief Justice Ellis Lewis, Admiral Porter and Hon. Richard Vaux. He leaves a widow, a son, Dr. Donnel Hughes, and three minor children.

J. M. PRICE, M.D., of Brazil, Ind., April 19.——Edward Shippen, M.D., of Baltimore, Md., April 22.——Russell Caulkins, M.D., of Cleveland, Ohio, April 21.——Francis A. Slater, M.D., of Chicago, April 24, aged 78.——J. C. Humphreys, M.D., of Greensburg, Ind., aged 79 years.——William A. Lewis, M.D., of Moosup, Conn., April 20, aged 66 years.——J. G. Schnebly, M.D., of Topeka, Kan., April 24, aged 65.——Moses R. Greeley, M.D., of South Weymouth, Mass., April 23, aged 68.——R. M. Lackey, M.D., of Oak Park, Ill., April 29, aged 59.——Frederick Andros, M.D., of Minneapolis, April 28, aged 92 years.——Ezra Stetson, M.D., of Princeton, Ill., April 28, aged 78.——F. Thomas, M.D., of Racine, Wis., April 23, aged 29.

PUBLIC HEALTH.

Typhoid in the Milk Can.—Secretary Lindsley of the Connecticut State Board of Health has run down the origin of a series of 164 cases of typhoid fever, all occurring among the patrons of one milkman in the town of Stamford, Conn. Inspection of a number of dairies from which this milkman obtained his supply revealed nothing suspicious, but the water of the well on his own premises—used for cleansing his cans and possibly for increasing the volume of his supply—was found to contain 69,660 bacteria to the cubic centimeter. Examination of a number of other wells in the vicinity also showed gross contamination and these have all been ordered to be filled up, and the milkman was at once forbidden to furnish any more milk.

Vaccination by Scratching.—Dr. H. Masson, a French military surgeon, up to last November had always used scarification as a means of inoculation with vaccine virus. He then abandoned it for a scratching method. The lancet, charged with the vaccine matter, is held almost perpendicularly to the arm between the thumb and the index, so as to use the point only. Then at the site chosen he scrapes the skin many times and very superficially, giving the instrument a slight to-and-fro movement from left to right and from above down. By this means only the epidermic cells are taken away. The vaccinal matter is spread out over this area and the garments are not replaced for eight to ten minutes. The results have been very satisfactory. Like M. Raffinesque, the author speaks of the enormous volume of the pustules and the severity of the inflammatory phenomena. With a view to reducing these, Masson limits the surface to be inoculated to about 2 millimeters square, thus obtaining pustules averaging 6 to 7 millimeters.[1]

School Hygiene.—On account of the small size of the plot of ground on which a public school in New York City is to be built, the architect has been told to build an out-doors playyard on the roof. Following are some of the novel features in the Henry Street school, which will occupy a space of 190 by 100 feet: the playground will be on the roof. It will contain 10,000 square feet of space, equal to four city lots. On the south, east and west sides, the playground will be protected by the roof, which will extend fifteen feet above the level of the playground. To the south, the view will be unobstructed, and protected only by a wire netting. It will be covered with a wire netting to prevent children from throwing missiles into the street. The playground on the roof will only increase the cost of the structure about $4,000. As the total cost is to be about $200,000, the additional outlay is a mere trifle, when the benefit to the pupils is taken into consideration. The first floor will contain an indoor playground. The floor will be of asphalt. The second, third and fourth stories are to be devoted to class-rooms, with sixteen on each floor. On the fifth floor will be the manual training school. Here there will be a gymnasium and cooking rooms, with kitchen and ranges, for girl pupils, who will be inducted into the mysteries of culinary art. The most unique feature will be the location, in the basement, of thirty shower baths for the free use of pupils. The bath suggestion has not been fully decided upon, but the plan has been submitted to the Board of Education, with indications that it will be adopted. It is possible that shower baths may not be built and that a big plunge bath may be substituted.

Illinois State Board of Health.—This body held its regular quarterly meeting in Chicago, April 30 and May 1 and 2. A number of questions concerning the recognition of medical colleges were discussed, but final action is not yet announced. The Secretary's report on contagious diseases shows that there were 105 smallpox centers outside of Illinois during the quarter and 26 points in the State with 90 cases and 15 deaths. The close of the epidemic in Chicago is dwelt upon, as already noted in the JOURNAL of April 13. A resolution was unanimously adopted by the Board, indorsing the administration of Dr. Arthur R. Reynolds, Commissioner of Health of Chicago, in which it is recited that he found "a practically unvaccinated community, requiring within the two years a total of 1,119,320 public vaccinations, more than one-half of which were performed within a single month; the hospital facilities were disgracefully and dangerously inadequate; there was no ambulance service, nor corps of trained assistants, nor appropriations to secure any of the essentials necessary to deal with an outbreak of a highly contagious and malignant disease." These difficulties were overcome and the outbreak was suppressed with a mortality of about 60 per cent. of the epidemic of 1871-74, of less than 45 per cent. of that of 1862-64, and of 26 per cent. of the great epidemic of 1880-83. The Board characterizes this wholesale immunization and its results as "an unparalleled achievement of sanitary administration"—"a triumph of preventive medicine which fitly closes the first century of Jenner's discovery."

Eucalyptus-Oil Disinfection in Scarlet Fever.—In a paper read before the Epidemiological Society March 15, ult., Dr Joseph Priestley, the well-known medical Officer of Health of the much-quoted town of Leicester, Eng., details the results of his investigation of the use of eucalyptus oil as a disinfectant in scarlet fever—a method of treatment originally proposed and enthusiastically advocated by J. Brendon Curvengen of Teddington, and indorsed *pro tanto*, by publication in the Transactions of the Society. The treatment, as detailed, consists in the use of eucalyptus oil in a compound known as "oleusaban," which appears to be a proprietary article said to be composed of the essential oil of eucalyptus globulus with thymol and other camphors and aromatic disinfectants in solution. This is used by careful rubbings with the oil over the whole body three times a day for three days, followed by one rubbing after a warm bath daily for seven days. The disinfectant is sprayed also into the patient's throat, mouth and nose and diffused into the air of the room. No eucalyptus is administered internally beyond what passes down into the stomach during the spraying process. In brief, Dr. Priestley's results with 120 patients thus treated—as compared with 161 cases treated in the usual

[1] Arch. de Med. Militaires.

orthodox way at the same time in the same hospital and under precisely similar conditions—were a lower death rate, a shorter stay in hospital, slightly fewer complications of a serious nature, and fewer "return" cases. Mr. Curvengen, in a corroborative communication to the *Lancet*, April 13, adds that the figures show that desquamation was hastened, so that patients thus treated were discharged from hospitals a week earlier than others; that there were few or no deaths—the deaths were 1.6 per cent. instead of 4.3 per cent under other treatment—and maintains that the cases with suppurative complications were about the same as under other treatment and that these are due under all forms of treatment to hospital infection by the streptococcus pyogenes and that few or none of these complications occur in private practice, citing the statement, in his paper before referred to, that he had treated 156 cases in their own homes at Bexley, without any suppurative complications. Mr. Curvengen suggests that the questions to be decided by those who are investigating this mode of treatment are: 1, does it check or stop infection? 2, does it lessen or shorten the fever? 3, does it shorten the period of desquamation? 4, does it prevent albuminuria? 5, does it reduce the number of deaths? And adds: "I, as well as many others, say it does all this, and it is for its opponents to prove by adequate experience that it does not."

Health Reports.—Sanitary reports to the Supervising Surgeon-General, Marine-Hospital Service.

SMALLPOX—UNITED STATES.

Arizona: Nogales, April 23, 2 cases.
Arkansas: Garland County (including Hot Springs), February 1[1] to April 22, 192 cases, 44 deaths.
Indiana: Jeffersonville, April 24, 1 case, 1 death; Clark County, April 24, 3 cases, 1 death; Perry County, April 24, 3 cases.
Kentucky: Henderson, April 26, 1 case.
Louisiana: New Orleans, April 13 to 20, 1 case.
Maryland: Charles County, April 27, 2 cases.
Michigan: Smallpox reported at Detroit, Grand Rapids and Brownstown Township, during week ended April 20.
New Hampshire: Newport, April 24, 1 case.
New Jersey: Union Township, Bergen County, April 20, 1 case.
Ohio: Cincinnati, April 19 to 26, 5 cases, 3 deaths.
Wisconsin: Springville, April 8 to 22, 1 case; Lawrence Township, April 8 to 22, 1 case; De Pere Township, April 8 to 22, 3 cases, 1 death; Granville Township, April 8 to 22, 1 case; Milwaukee, April 8 to 22, 16 cases, 1 death; April 20 to 27, 5 cases, 2 deaths.

SMALLPOX—FOREIGN.

Bohemia: Prague, April 1 to 6, 5 cases.
Brazil: Rio de Janeiro, March 9 to 16, 2 deaths; Santos, March 9 to 16, 7 cases, 3 deaths.
Cuba: Havana, April 11 to 18, 6 deaths.
England: Birmingham, April 6 to 13, 1 death; Leeds, April 6 to 13, 1 case.
Holland: Rotterdam, April 6 to 13, 5 cases, 2 deaths.
India: Calcutta, March 9 to 16, 163 deaths; Singapore, December, 1 death.
Ireland: Dublin, April 6 to 13, 2 deaths.
Italy: Bologna, April 6 to 13, 1 case.
Mexico: Acapulco, April 6 to 13, 3 deaths; Nogales, April 23, 8 cases.
Russia: Moscow, March 23 to 30, 2 deaths; Odessa, March 31 to April 6, 6 cases, 1 death; St. Petersburg, March 31 to April 6, 6 cases, 1 death.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, March 9 to 16, 20 deaths; Santos, March 9 to 16, 50 cases, 48 deaths.
Cuba: Havana, April 11 to 18, 2 cases, 1 death.
Mexico: Vera Cruz, April 11 to 18, 1 death.

CHOLERA—FOREIGN.

India: Calcutta, March 9 to 16, 45 deaths; Madras, March 16 to 22, 1 death.

MISCELLANY.

Change of Address.—Dr. Martin M. Ritter, to Reliance Building, Chicago.

[1] Beginning of epidemic.

Tubercle Bacilli in the Nose.—Dr. Straus has shown in *Archiv de Médicâle Experimental*, the occurrence of these bacilli in the nasal cavities of persons, themselves in good health, who have been frequenting localities where phthisical patients were habitually present.

Society of the New York Hospital.—The annual report of the Society of the New York Hospital shows the number of patients admitted to the various wards in the New York Hospital during the last year was 4,708. The total number discharged was 4,700. But of this number 1,118 were cured, 3,154 improved, 150 unimproved, and 278 died. The number of out-patients treated during the year was 8,700.

American Medical Editors.—The annual dinner of the American Association of Medical Editors will take place Monday May 6, at the Equitable Building (ninth floor), Calvert and Fayette Streets, Baltimore. A business meeting will be held at 6:30 P.M., at the same place. Members may bring guests upon purchase of tickets for them. Banquet tickets, $5. Those expecting to attend will please write immediately, stating number of tickets desired, to William B. Canfield, M.D., 1010 N. Charles Street, Baltimore, Md.

Casualties by Foot-ball in the Season ending April 20.—The English foot-ball year closed at about the above date. The *Westminster Gazette* publishes its annual statement, the "Foot-ball Butcher's Bill," a summary of losses by that popular form of athletics. The deaths of the past season were twenty in number, subsequent upon injuries received on the foot-ball field. There were also over one hundred and fifty legs, arms and collar-bones broken, besides many cases of concussion of the brain or spine paralysis, knee-caps split, peritonitis and hundreds of minor casualties.

A Centenarian's Festivity.—On April 20, at Glassborough, N. J., Mrs. Hannah Chard celebrated her one hundred and sixth birthday. Four generations of her descendants attended and many others, for everybody within a radius of ten miles had been invited. Of twelve children, three sons survive; the eldest is 73 and the youngest 61 years old. She has thirty-two grandchildren, eighty-one great-grandchildren, and twelve great-great-grandchildren. She is active, rising commonly at 5:30; has a good memory for events, and keenly enjoys an occasional smoke, using a clay pipe, by preference.

Treatment of Anthrax.—According to Lecourt the treatment of anthrax should consist of: 1, sterilization of the skin around and over the focus with a tampon soaked in a 5 per cent. carbolic solution; 2, repeated punctures with the thermo-cautery two or three centimeters apart on the surface of the anthrax (fiery wells of Verneuil); 3, irrigation of each of these openings with the carbolic acid solution until the liquid returns clear; 4, injections of a 5 per cent. solution of iodoform in ether in these openings; 5, wet dressing with many folds of gauze moistened with a 2 or 5 per cent. carbolic acid solution according to the tolerance of the skin. The main point in the treatment is to obtain deposits of the iodoform crystals on the walls of these openings. The dressing should be large and extend beyond the inflammatory zone. Lecourt reports twelve cases treated by this method, all successfully.[1]

The Medical Missionary Society of China.—Dr. C. R. Hager writing from Canton, gives a summary of the fifty-sixth annual meeting of the above society. The managing committee show that the work of the Canton Hospital reached 19,000 out-patients, or attendances, and that an equal number was reached in other hospitals of that province, the total being 38,967. The admissions to hospital were 1,410, surgical operations 2,154, dental 2,053, while 1,311 visits to the

[1] These de Paris.

houses of the sick were made. The expenditures were $2,000 while the receipts were nearly $3,800. The field covered by this society never ceases to expand, and it now conducts medical or dispensary relief in seven or eight centers. Dr. Kerr now in charge of the Canton Hospital, as well as the president of the above named society has been on the ground fully forty years.

The "Ideal Physician" Again.—A recent writer offers the following: "The ideal medical man is better described under the title of 'the philosophical doctor' than as the medical philosopher, for he is *primarily* a physician, but must make use of philosophical ways and means if he is a rational—and from the standpoint of his fellow physicians—a successful physician." We all know that to be well esteemed by the better class of his colleagues the wide-awake doctor must belong to the physiologic school. So that if the saying above quoted be true, too, we begin to see that none of us may set ourselves up as "ideal" unless we can answer to the call for a physiologico-philosophical line of practice. This is a long definition, but there are those who can and do conform to it in their daily walk and conversation.

New Method of General Anesthesia.—Rosenberg observes: 1, that the cardiac syncope sometimes occurring in the course of chloroform anesthesia is—always excepting those cases in which the anesthetic is given in exceptional doses or without care—an accident of reflex origin; 2, in common with the arrest of the respiratory movement it is caused by an excitation of the peripheral terminations of the trigeminus in the nasal mucous membrane; 3, inhalations of any anesthetic whatsoever, cause the same reflex phenomena of irritation as chloroform; 4, by a rational application of cocain to the nasal mucous membrane we may suppress all the phenomena of reflex irritation starting from this point; 5, we may thus eliminate a great deal of the danger from anesthesia by inhalation of vapors, notably chloroform; 6, under these conditions chloroform becomes the least dangerous of the anesthetics and is preferable to ether for surgical purposes. As regards the technique with chloroform: 1, it should be given by drops at first; 2, the administration of chloroform should always be preceded by the application of cocain to the nasal mucous membrane; 3, its administration should always be intrusted to a physician.[1]

Osteomyelitis following Typhoid Fever.—Dupont uses the term osteomyelitis in preference to periostitis, osteitis, etc., in describing the osseous lesions consecutive to typhoid fever, since the disease process always begins in the medullary tissue, and the bone and periosteum are only attacked secondarily; when the medulla is the seat of infection it is evidenced by the changes in the bone and periosteum. These lesions are most often observed in the child and youth, either in the course of the fever or during convalescence. Fatigue and traumatism are among the other predisposing causes. The pathogeny is to be found in the infection of the medulla, either by Eberth's bacillus or some other micro-organism. Another interesting fact pointed out by Dupont is the frequency of the chronic apyretic evolution of these osseous invasions. The post-typhoid osteomyelitis usually ends in recovery, but the disease is of long duration. Therapeutic measures will depend on the extent and gravity of the lesion. In the majority of cases, rest in bed from the beginning, incision of the sub-periosteal abscess, with scraping of the bone and trephining, if scraping does not suffice.[2]

Corporal Punishment in London Schools.—Before the London School Board the question was under discussion if the female scholars in the Board Schools should be whipped the same as the boys, and whether or not girls felt the indignity against their persons more poignantly than the boys. MR. Athelstan Ridley advocates that the rod should no more be spared in the case of a girl deserving punishment than a boy; in fact, according to his experience—which had been considerable—girls are more spiteful than boys, and a good caning is often richly deserved and is beneficial in the end. The question of the corporal punishment of the female sex in the free schools is to come up at the next Board meeting.

Eight Sheffield Anaks.—A recent importation of an English family, the head of which is a Sheffield knife-grinder named Shields, passed through the port of New York destined for Mormondom. The children of the family are nine in number, eight sons and one daughter. Of these sons, the shortest one—a youth still in his teens—is six feet and seven inches tall. The united longitude of these sons arranged in a vertical manner, is not far from fifty-four feet, or eighteen yards. The New York *World* reports the father as saying:

"I am 64 years old, and my wife is a year my junior. We had nine children (he said this with a sweep of his rugged hand) and the good Lord has spared all of them to us. Our eldest son is 35 years of age, and the youngest is 19. Our daughter, Grace, is 23, and she is the pet of the family. How do I account for the extraordinary size of my sons? Well, that is, I suppose, one of the great mysteries of nature. It was the Lord's will and His will be done."

The father is rather above the average height, while the mother is rather below the medium.

Personal Notes.—TERES ATQUE ROTUNDUS.—The profession of Dublin has in one of its members a heavy-weight all 'round sport in the person of Dr. Austin Meldon, of Merrion Square, whose weight is 378 pounds. He is a bicycle rider and lawn-tennis adept. He is the author of a treatise on dermatology, and is surgeon to an eye and ear infirmary; he is also known to have written on gynecologic and obstetric subjects, as well as cholera, gout, rheumatism and surgical anatomy. He has been a demonstrator of anatomy and has not neglected the interests of life insurance.

DR. IRVING W. LYON, of Hartford, who has been elected to the Presidency of the Hartford County Medical Society, is an ex-interne of Bellevue Hospital and the Medical Director of the Hartford Life and Annuity Insurance Company.

MR. MYRON WHITNEY has a case before the Court of Claims of New York, demanding damages for a deprivation of his liberty in the Insane Asylum at Utica, the amount claimed being in excess of $1,250,000; he asks for $5,000 per diem for 264 days.

Hereditary Essential Polyuria.—Marinesco reports the cases of two brothers afflicted with essential polyuria since their childhood. Their mother had polyuria during her pregnancies. The patients passed on the average twenty-eight liters of urine per day. Uranalysis showed only an increase in the chlorids. One of the children died from cerebral meningitis and necropsy disclosed a gelatiniform appearance of the walls of the fourth ventricle, with hypertrophy of the neuroglia, considerable edema and disappearance of the fibrillæ found there normally. Outside the nuclei for the vagus were some small hemorrhages.[1]

Cardiac Complications of Gonorrhea.—Prevost reports the case of a patient who, after an urethral injection of permanganate of potash during the acute stage, presented symptoms of endocarditis with a mitral insufficient murmur, fever and thrombosis of the right brachial vein. Endocarditis, especially localized on the mitral valve, is the most frequent form of cardiac disease due to gonorrhea. It may assume a simple acute form, or an infectious and rapidly fatal type. The pathogenic influence of the gonococcus is not yet proved. The author is of opinion that injections which may bring about the complications should be interdicted during the acute stage.[2]

Percussion Sound of the Thorax.—Castex by using Doumer's method—photographing manometric flames—concludes that

[1] Rev. Int. de Ther. et Pharm.
[2] These de Paris.

[1] Le Mereredi Medical.
[2] Arch. Med. Belges.

the shock of percussion starts into movement the pulmonary aerial mass, the thoracic walls and the pulmonary tissue. The pulmonary air vibrates in obedience to the laws of resonance and gives out its proper sound, which we may term the pulmonary sound. The thoracic walls, or better, the ribs also emit a sound—the parietal sound. As for the pulmonary parenchyma, like the soft integument, it has no proper sound and only tends to smother the other two sounds. The combination of the pulmonary and parietal sounds, mixed with the bruit of the shock and the sound of the pleximeter, constitute the percussion bruit of the thorax. According to the manner of percussing, the relation between the intensity of the parietal and pulmonary sounds may vary and one of them may predominate in the percussion bruit.[1]

Treatment of Pyloric Strictures.—Durante has originated what he calls the "plastic gastroduodenal operation" for use in difficult cases of pyloric stricture—for instance, in diffuse stricture of the pylorus and duodenum with multiple adhesions of neighboring organs. After an incision as for pyloroplasty he lacerates the thickened wall of the pylorus and then makes a sort of autoplasty. He prolongs the incision on the anterior wall of the stomach above and close to the bone; lowers the triangular flap thus formed to the incision in the duodenum, and sutures the edges to this incision. He reports no recurrence after two years.[2]

The "Golden Climate" of the Canaries.—Dr. Douglas, formerly of Sunderland, England, was driven by ill-health to seek a clime less trying than his own, and made his temporary home at Las Palmas, the capital of the Grand Canary. The balmy qualities of the atmosphere are indicated by the facts that fire-places in the dwelling rooms of the houses are almost unknown; that the invalid may live, practically, in the open air twenty-four hours each day, bed-room windows being seldom closed; months may pass by without the visitor being confined to the house by rain; excessive heat at times prevails when the winds are easterly, borne from the African mainland; these islands are supposed to be the Fortunate Islands of Pliny, whose "people never die." Dr Douglas states that he went to Las Palmas, branded with the ominous words, "no hope," but he recuperated rapidly and was enabled to return a new man as to condition of health. He cast the stake of his life on the throw, and he will not hesitate to do the same again. He commends the Grand Canary, and after a careful investigation, regards Las Palmas as having the finest climate of which we have any knowledge.

An "Amateur Casual" Visits Charity Hospital on Blackwell's Island, New York.—A reporter of the New York *World* was instructed to gain admittance to that hospital and make a full report of his findings, *a la* James Greenwood of the *Pall Mall Gazette*, who several years ago, over the signature of "Amateur Casual" showed up the work-house management of London. The *World* reporter, in this instance, developed a sudden attack of rheumatism, with a bad cough. The examining physician was imposed upon and passed the would-be patient up to the hospital as being sick by neuritis. He was given a bath, and a clean, coarse, unbleached shirt, but no underwear. His own underwear, however, was returned to him later. He was vaccinated. He was taken to a ward where tuberculous and rheumatic patients were the occupants, the former predominating. The food and medicine were not approved by the reporter, the milk being thin, the "tea" poor, the bread stale and sour, the beef very tough and the "extras" few and distributed by assistant orderlies who are, in fact, almshouse convalescents. The reporter found that one of the night watchmen was an insanity-suspect, and a nurses'-helper was an epileptic, who had a fit at 4 o'clock one morning when "on duty." The help was efficient so far as was necessary to keep the ward in a condition of exemplary cleanliness, but beyond that not much could be said. The beds were satisfactory except that the pillows were carelessly made of hard coarse straw. No table-cloths or napkins were allowed. The worst features of the management of the interests of the sick were overcrowding and imperfect classification of diseases, along with the employment of unpaid almshouse help. The character of the nurses themselves is not made the subject of complaint.

Ablation of Luschka's Tonsil.—Escat gives the following indications for and against the removal of the pharyngeal tonsils in children: Indications—1, adenoid vegetations, shown by rhinoscopy or by digital examination, obstructing the posterior nares, with continued oral respiration, dryness of the throat, snoring at night, etc.; 2, adenoid vegetations of moderate size with relative facility of nasal breathing, but with one or more of the following complications—deafness from tubercular catarrh, chronic oral respiration, rebellious symptoms of chronic bronchitis, attacks of laryngismus stridulus, spasm of the glottis, arrested thoracic development, difficult respiration in infants, rendering nursing difficult. Contra-indications—1, slight hypertrophy not obstructing over one quarter the height of the posterior nares, with few or no functional symptoms; 2, false hypertrophy due to an acute adenoiditis resembling a chronic state in which there is at the same time acute coryza, redness of the pharynx, fever, etc. (in case of doubt examine the parts at several days' interval); 3, intercurrence of a grave chronic affection of the lower air passages such as phthisis; 4, during the prevalence of epidemics—grippe, measles, scarlatina, erysipelas, diphtheria, etc. General anesthesia is indispensable in operating on the child. The best instrument is Gottstein's adenotome modified by Calmette. The nasal fossæ should be prepared by daily application of antiseptic ointments, and gargles and antiseptic irrigations used for the throat.[1]

Antipyrin-Salol in the Treatment of Uterine Hemorrhage.—Professor Labadie-Lagrave has used antipyrin successfully in the treatment of certain uterine hemorrhages. It is difficult to introduce powdered antipyrin into the uterine cavity, so it occurred to him to use antipyrin liquefied with salol, thus producing a medicament at once hemostatic and antiseptic. The following is the mode of procedure: equal parts of antipyrin and salol are placed in a test tube so as to occupy about one-third the space; they are then heated over an alcohol lamp, when the mixture is soon transformed into a clear liquid with a slightly brownish tinge. This is not the time to use the solution, for it will solidify too rapidly. The heating is continued until a well-defined brown color is noticed, when there is no longer any danger of its rapid solidification. The liquid is introduced by means of cotton soaked in it and rolled on a wooden applicator; after seeing that the liquid is not too hot, the application is made through the speculum. If the hemorrhage is excessive, two applications are made at the same sitting, after which a tampon soaked in glycerated creasote is placed in the vagina and the patient sent to bed. The applications are free from danger and occasion no pain. Their hemostatic action is rapid, sure and complete; the hemorrhage is quickly stopped and by the second day there is usually no trace of hemorrhage; it is rare that the application needs to be repeated. The method is efficacious against hemorrhages due to fungous metritis, to misplacements, fibromyomata and also to malignant tumors in the beginning, when the hemorrhage is due more to congestion than to ulceration.[2]

Practice of Medicine in China.—The labors of the Chinese doctor begin at daybreak when he begins to receive his consultants. At 10 o'clock he is carried to his patients in a chair. The patient hangs a card with his doctor's name in front of the door—a necessary precaution and guide to the doctor, for the houses are all alike and without any numbers.

[1] Arch. de Physiol.
[2] Rev. Int. de Med. et Chir. Prat.

[1] Arch. Med de Toulouse.
[2] Bulletin de Therapeutique.

The doctor is received with profound reverence. He is offered tea and a pipe and is then asked to feel the patient's pulse. If it is a man, the doctor sits face to face; if a woman a screen of bamboo is interposed which is removed in order to examine the tongue. The patient places his hand on a book and the doctor applies three fingers to the pulse, feels with each one, then uses all to compress the artery strongly for a period, counting but without noticing the number of pulsations. The patient now extends his other arm and the operation begins again. The doctor then asks some questions about the sickness and when he finishes is handed a pen. He writes a prescription, most of the ingredients being taken from the vegetable kingdom. If the patient is a mandarin or other wealthy person, the doctor indicates by writing the nature of the disease, the prognosis and treatment, and receives as an honorarium 7 to 8 francs. Often, however, the family and friends are content with a simple verbal communication. The money is wrapped in red paper and if very grateful in gilt paper. Except with persons of rank and wealth, the fees vary usually from 16 cents to 2½ francs according to the patient's condition. The family is supposed to pay the chair-bearers besides. The doctor does not make a second visit unless he is asked. If recovery is slow they call in a second doctor, then a third, a fourth and so on, until finally they have recourse to the god who possesses the greatest reputation for curing.[1]

General Character and Skill are not to be Considered.—In an action for malpractice of a surgeon, the complaint alleged negligence and unskillfulness on the part of the defendant in the treatment of the case. There was no allegation nor was evidence offered by the plaintiff to show, by general reputation or otherwise, that the defendant lacked the ordinary and competent skill which belongs to his profession. The allegations and proofs on the part of the plaintiff, so far as skill of the defendant was concerned, were confined to the question of the degree of skill employed in the actual treatment of the plaintiff's case. But, when the defendant had the case, he was permitted to introduce the evidence of witnesses to the effect that he was generally reputed and considered to possess a high degree of skill in his profession. The evidence was received under the objection and exception of the plaintiff, and, a verdict having been rendered for the defendant, that exception was the ground on which a motion for a new trial was granted. That the admission of the evidence was error, and that the motion for a new trial was properly granted on that ground, the General Term of the Supreme Court of New York affirms (Degnan v. Ransom, Dec. 27, 1894). It says that it is a little difficult to see, on principle, how the general character of the surgeon can ever be material to the inquiry whether he has been guilty of malpractice in a particular case, because it is certain that, though he be the merest pretender to surgical skill—the veriest quack—yet if, by chance, he treats the particular case correctly, he is not guilty of malpractice; and, equally, though he be a master in his profession, yet if, through neglect to apply his skill in the particular case, he treats it improperly, the patient may have his action.

Examination of Army Medical Officers for Promotion.—Boards for the examination of assistant surgeons for promotion have recently been convened at Washington, D. C., and Fort Leavenworth, Kansas. These boards are required to examine into the physical condition as well as the character and professional efficiency of the candidates for promotion. When an officer is found to be physically incapacitated for active service the board concludes its examination and reports the cause which, in its judgment, produced the disability and whether the disability was contracted in the line of duty. Should the officer prove to be sound in body and mind, the board proceeds with the second part of the examination; and any evidence submitted as to character is carefully considered and such proceedings taken as the case seems to require, provided that an adverse finding shall not be entered until the officer has been heard fully on his own behalf. The professional examination is conducted in writing, and the questions and answers are transmitted to the Surgeon-General with the proceedings of the board, the favorable report of which is couched in the following terms: "We find that ——— has the physical, moral and professional qualifications to perform efficiently all the duties of the grade to which he will next be eligible, and recommend him for promotion thereto." When the board fails to recommend in these terms the record must explain the cause of the failure. For the guidance of the officers concerned, Surgeon-General Sternberg, under date of April 3, 1895, has issued instructions concerning the scope of the professional examinations. The lieutenant under examination for his captaincy has to show a competent knowledge of: 1, first aid and transportation of wounded; 2, hospital and hospital corps administration; 3, Army Regulations so far as they relate to the Medical Department or to the medical officer as an officer of the Army; 4, general and military hygiene; 5, recent progress in medicine and surgery; 6, subjects in which the officer may have been conditioned at his examination for appointment. The captain before obtaining his majority is examined in: 1, Army Regulations so far as they relate to the Medical Department or to the medical officer as an officer of the Army; 2, general and military hygiene; 3, clinical medicine, including recent progress in etiology, pathology and therapeutics; and 4, surgery and gynecology, including new operative procedures and the technique of aseptic surgery.

An Intrepid Medical Explorer.—Dr. Emil Holub, who is now visiting in the United States, has not inaptly been named the "modern Livingstone." There are points of manifest similarity between the two men, such as the medical training, their powers of endurance and courage, and the territory—the southern and central parts of Africa—that has attracted them and caused them to spend years of most laborious effort at exploration. The two men had their wives with them during a part, at least, of their journeyings. *Illustrated Africa*, a journal that has published some of the results of Dr. Holub's travels, presents some interesting facts concerning this adventurous medical explorer and his brave wife who consented to go with him to Africa and undertake a second and semi-official voyage of discovery. That journal says:

"Dr. Holub first arrived in South Africa on July 1, 1872, with a medical diploma and experience, and £2 sterling in his pocket, determined to provide himself with whatever was needful for his scientific researches to the northward. Making his way to the diamond fields, he engaged in the practice of his profession before undertaking his first journey, which extended into Bechuana and the Transvaal. Returning to the diamond fields to accumulate larger resources as the reward of his medical skill, he made his second journey, pushing further northward and returning to the coast finally after many hardships and serious losses, with a large quantity of valuable specimens, with which he returned to Europe in 1879. These attracted wide interest, and by a course of lectures in Germany and Austria, Dr. Holub secured most of the resources required for a second and more extensive series of explorations.

"This journey was taken under the patronage of the Emperor of Austria-Hungary, and he chose for his assistants six Austrian soldiers, who were also artisans and tradesmen. Having observed the fact that European women were less liable to contract African fevers than men, he consented to being accompanied by his young bride, whose bravery and devotion, skill and womanly resources saved him and his expedition.

"The second journey of exploration, which covered a period of four years, was begun in 1883, arriving in Colesburg from Cape Town in April, 1884. From this point transportation was made by teams of from sixteen to twenty oxen; preserving their lives while passing through localities where they were liable to contagious diseases frequently calling forth his medical skill. On one occasion all the cattle were attacked by a lung complaint which, unchecked, would have destroyed them. Calling into use a method of treatment known to the Dutch for fifty years, he vaccinated sick oxen with the decayed lungs of some that had died, and thus saved all the rest. When he had advanced as far on his journey as the Limpopo River the oxen, upon whom the movement of the expedition was then dependent, were attacked by a disease of the spleen. In

[1] Journal d' Hygiene.

view of the success of the lung vaccine he determined to try an experiment, and made a valuable veterinary discovery by curing the dying cattle with the aid of spleen vaccine."

"Purity not Penitence"—Faulty Preparation of Water-Supply Basins.—The *Boston Medical and Surgical Journal* has an article on the proposed new supply of water that is to give to the Boston of the future that most precious of the gifts of earth, a clean clear water. The Greater Boston, to be taken into the account at the present juncture, will soon have a population of 2,000,000 people, and those having charge of the proposed new plant are adjured to remember that what mankind demands of a drinking water "is not repentance but purity." To obey this dictum is better than sacrifice, and not to obey it, in fact, is a sacrifice of human life.

The country-side from which the supply will be derived is that of the sparsely settled slopes of Wachusett Mountain, about forty miles due west from Boston. The land is poor and uninviting to farmers and the region has thus far offered no temptations to a manufacturing population. It is relatively free from swamps, the presence of which in the Sudbury section, that is now utilized for Boston, gives so undesirably high a coloration to the present supply. This Wachusett scheme is capable of extension to still other sources of pure supply so soon as an added quantity shall be demanded. The amount of money that the new system will cost will be $19,000,000, of which $4,000,000 will immediately be applied to preparing the great storage reservoirs that are to form a part of the system. It has been found, in regard to the present Sudbury system, that a great improvement has been effected by the more thorough removal of the soil from two of its great basins, which at first had not been thus treated. This lesson has led the Boston authorities to follow the same line of treatment in the basins that have lately been introduced into the Sudbury system.

The Boston and Lawrence lessons teach that too great care can not be exercised in the construction of water reservoirs; and the inference is inevitable that the water engineers of the past have either not appreciated or have not insisted upon the need of a more thorough preparation of those basins than has been practiced. This line of work is not the cheap way, but it is one that is competent to the production of an attractive, colorless drinking water.

The water of Lake Winnipiseogee, in New Hampshire, has for a generation been looked forward to as the ideal water of the future, but that had, perforce, to be given up by the Boston Commission. In the first place, the lake being in another State, it was highly improbable that Massachusetts could have that absolute control that would be desirable to protect the waters; then, the lake is not above suspicion, having already shown a measurable degree of pollution, which is in the future destined to be increased.

Another proposition that has had to be discarded was the use of the filtered waters of the Merrimac River. The use of these waters by the city of Lawrence has been so satisfactory—and the ready avoidance of certain legal questions making a strong argument on their behalf, on the score of expediency—some have thought favorably of drawing from this source; but these, being filtered waters, are not absolutely above suspicion. The Commission determined to find, if possible, a pure water rather than a purified one. Another drawback in connection with a large filtration plant, employing a hundred or hundreds of workmen is the possibility of a "strike" and a locking up of the drinking water of a great metropolis; there was in this an element of risk that needed to be taken into account. In connection with other considerations this risk had a deterrent force as against the Merrimac supply.

Society Notes.

THE one hundred and second annual meeting of the Windham County Medical Society was held in Hartford, Conn., April 23.——The Fox River Medical Society held a regular meeting at Kaukauna, Wis., April 23.——The Montgomery County Medical Society met in Crawfordsville, Ind., April 16. The following officers were elected for the ensuing year: President, R. Kelso; Vice-President, W. H. Ristine; Secretary, P. J. Barcus.

Hospital Notes.

BROOKLYN HOSPITAL.—This, the oldest institution of its kind, is soon to pass its fiftieth birthday. In untimely preparation for this event, a discrepancy has been announced to have sprung up between the medical staff and the board of trustees. Two physicians and two surgeons on the visiting staff have sent in their resignations; one or more of these resigning members will, however, be transferred to the consulting staff. The true grounds of dissatisfaction appear to be unknown to the writers of the newspaper statements. As might be expected, the medical staff is slow to give out anything for publication. The trustees also are reticent, except that they hope to persuade the resigning members, or some of them, to reconsider their resignations. A sufficient number of the attending staff remain with the hospital to care for the patients.

Philadelphia Notes.

THE PHILADELPHIA COUNTY MEDICAL SOCIETY, on account of the session of the AMERICAN MEDICAL ASSOCIATION next week, resolved to postpone the stated meeting of the 8th inst., to May 15, and to omit the meeting of the 22d, which would conflict with the State Medical Society session at Chambersburg, beginning May 21.

THE ANNUAL DINNER OF THE ALUMNI ASSOCIATION of the Jefferson Medical College will be held May 14 at the Hotel Bellevue, Philadelphia. The committee earnestly desires that every alumnus will make a special effort to be present. The acceptance and money, $3, should be sent prior to May 5 to the Chairman of the Committee, Dr. Howard F. Hansell, 254 S. 16th Street, Philadelphia, in order to have the invitations sent and the names printed on the menu cards as subscribers to the dinner.

DR. GEORGE M. GOULD tendered a complimentary reception May 2 to DR. James E. Reeves, of Chattanooga.

Louisville Notes.

CITY HOSPITAL.—May 1 of each year is the usual time for the visiting staff of the hospital to be appointed by the Board of Public Safety, and there was great surprise caused by the announcement that during the coming year the Southwestern Homeopathic Medical College would be entitled to equal representation upon the staff of visiting surgeons and physicians. It is the claim of the homeopaths that they are a legally chartered college, and that they are entitled to full recognition at the hospital, receiving one-fifth of all the patients admitted for treatment. There exists in Louisville a "Colored Medical College" which is legally chartered, and its graduates are recognized by the State Board of Health. The four regular schools whose faculties have served the city so well without compensation for so long are justly indignant because of this recent ruling, and claim that the colored school has the same right to a representation upon the hospital staff as the homeopaths; in fact, a greater right, for a far larger proportion of the inmates of the hospital are colored than are believers in the Hahnemann doctrine. But the Honorable Board of Safety state that they intend to draw the color line, and the negro college has no right to demand recognition at their hands, but that the homeopathic college with perhaps fifteen or twenty students, has the right to equal representation upon the staff with the four regular colleges, which send each year four hundred or more students to the clinics there, meaning a revenue of $2,000 to the city. The subject is being widely discussed, but no step has been decided upon.

SMALLPOX.—Henderson has a case of smallpox, but as this is the home of Dr. Arch Dixon, a member of the State Board of Health, there is no fear of a serious outbreak, as every precaution has been taken.

STRUTTON.—Dr. Levi B. Strutton died April 24 at his home

near Lawrenceburg, from the result of a fall, which produced concussion of the brain. He was 81 years of age.

MAXWELL.—Dr. J. C. Maxwell, one of the oldest and most prominent men of Lebanon, died at his residence on the 26th inst., from cancer of the stomach.

DEATH REPORT.—There were 83 deaths from all causes during the past week. Of these 21 were due to pneumonia, 16 to consumption, 3 each to typhoid fever, organic heart disease and cerebral meningitis. Forty-six were male, 37 female; 53 white, 30 colored. Five deaths occurred at the City Hospital. There were 5 stillbirths.

PATHOLOGIC AND ANATOMIC ASSOCIATIONS.

AN ACT to provide for the incorporation of pathologic and anatomic associations for the advancement of medical and surgical science: State of New Jersey. (Passed the Legislature and signed by the Governor.)

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey*, That any three or more physicians duly authorized and licensed to practice medicine under the laws of the State of New Jersey, who shall desire to associate themselves together for the purpose of pathologic and anatomic study and the advancement of medical and surgical science may make, record and file a certificate in writing in manner hereinafter mentioned.

2. *And be it enacted*, That such certificate in writing shall set forth:

I. The name or title assumed to designate such association;

II. The place or places in this State where the purposes of such association are to be carried out;

III. The purposes for which the association shall be formed;

IV. The names of the governors or directors who shall manage its affairs for the first year of its existence.

3. *And be it enacted*, That such certificate shall be proved or acknowledged and recorded, as is required of deeds of real estate, in a book to be kept for the recording of certificates of incorporation in the office of the clerk of the county where the purposes of such association are to be carried out, and after being so recorded shall be filed in the office of the Secretary of State; the said certificate, or a copy thereof, duly certified by said clerk or secretary, shall be evidence in all courts or places.

4. *And be it enacted*, That upon making such certificate and causing the same to be recorded and filed as aforesaid, the said physicians associating, their successors and assigns, shall, by virtue of this act, be a body politic and corporate in fact and in law, by the name stated in such certificate, and by that name they and their successors shall have perpetual succession and power to sue and be sued, plead and be impleaded, answer and be answered unto, in all courts and places whatsoever, to make and use a common seal, and the same to use at pleasure and take, have, hold, receive and enjoy any lands, tenements or hereditaments in fee simple or otherwise, and any goods, chattels, or property of any description, real or personal, and whether acquired by gift, grant, devise, bequest, or otherwise, and the same to grant, convey, lease, assign, sell or otherwise dispose of for the purposes of said association.

5. *And be it enacted*, That the directors or governors of such association shall have power from time to time to make, alter and amend by-laws not inconsistent with the constitution of the United States or of this State, fixing or altering the number of its governors or directors for the management of its property and the regulation and government of its affairs, and providing for the mode of filling vacancies in and removing any member from their number and prescribing qualifications for membership of the association, and to appoint such agents and officers as shall in their judgment tend to promote or advance any purpose of the association and to prescribe their respective duties.

6. *And be it enacted*, That no governor or director of any association organized under this act shall receive, directly or indirectly, any salary or emoluments from such association, nor shall any compensation whatever be voted, allowed or paid by the governors or directors thereof, to any governor or director for services, either as governor or director, or in any other capacity.

7. *And be it enacted*, That the property of any association organized under this act and held for its purposes to an amount not exceeding five thousand dollars shall not be liable to the imposition of any taxes.

8. *And be it enacted*, That whenever an association shall be formed or organized under this Act in any county of this State, all public officers, agents and servants of this State, and all officers, agents and servants of any county or of any city, township, borough, district and other municipality and of any and every almshouse, prison, morgue, hospital or other public institution in such county, having charge or control over dead human bodies required to be buried at the public expense are hereby required to notify the president or other head officer of any such association or such person or persons as may, from time to time, be designated by said association as its duly authorized officer or agent, whenever any such body or bodies come to their knowledge, under their control, and shall, if such association or its duly authorized officer or agent request it, without fee or reward, deliver such body or bodies, and permit such association and its duly authorized officers or agents, who may comply with the provisions of this act, to take and remove all such bodies, for the purposes within this State for the advancement of medical and surgical science: but no such notice need be given, nor any such body be delivered, if any person claiming to be, and satisfying the authorities in charge of said body that he or she is, of kindred or is related by marriage to the deceased, shall claim the said body for burial, but it shall be surrendered for interment; nor shall the notice be given or body delivered, if such deceased person was a traveler who died suddenly, in which case the said body shall be buried.

9. *And be it enacted*, That the said association may employ a carrier or carriers for the conveyance of said bodies, which shall be well inclosed within a suitable encasement and carefully deposited free from public observation; the drivers or persons in charge of such carrier or carriers shall obtain receipts by name, or, if the person be unknown, by a description of each body delivered by him, and shall deposit said receipts with the person or persons in charge of the institution from which the said body was taken.

10. *And be it enacted*, That no association organized under this act shall be allowed or permitted to receive any such body or bodies until a bond shall have been given to the State of New Jersey by the said association, with two or more sureties, to be approved by the clerk of the court of common pleas of the county in which such association shall be organized, and shall be filed with the said clerk of said court, which bond shall be in the penal sum of one thousand dollars, conditioned that all such bodies which the said association shall receive shall be used only for the promotion of medical and surgical science within this State; and whosoever shall sell or buy such body or bodies, or in any way traffic in the same, or shall transmit or convey, or cause or procure to be transmitted or conveyed, said body or bodies to any place outside this State, shall be deemed guilty of a misdemeanor, and shall, on conviction thereof, be punished by a fine not exceeding two hundred dollars or be imprisoned at hard labor for a term not exceeding one year, or both, at the discretion of the court.

11. *And be it enacted*, That neither the state nor any county nor municipality, nor any officer, agent or servant thereof, shall be at any expense by reason of the delivery or distribution of any such body or bodies, but all the expense thereof shall be paid by the association receiving said body or bodies.

12. *And be it enacted*, That whenever more than one association shall be organized under this act within the same county it shall become the duty of the board of governors or directors of each association so as aforesaid organized within the same county to appoint two of their own number, who together shall constitute a board of distribution of dead human bodies, subject to delivery to such associations under the provisions of this act, which board of distribution shall be notified, as provided in the eighth section of this act, whenever any body or bodies may be subject to delivery under the provisions of this act, and it shall be the duty of said board of distribution to distribute the bodies which may from time to time be so delivered to it under the provisions of this act equally and in just rotation among the different associations organized under this act.

13. *And be it enacted*, That it shall be lawful for any association organized under this act to apply for and to receive from any county in this State, dead human bodies, which may be required to be buried at the public expense and which shall not be claimed by any kindred or relation, as provided in the eighth section of this act, and it shall be lawful for any public officer or agent or any person in charge of a public institution as enumerated and set forth in the eighth section of this act, to deliver such human body or bodies under the restriction of said eighth section of this act, to any association organized under this act in any county in this State; *provided, however*, that when any association shall have been organized in any county, no body or bodies shall be removed to another county without the association or associations within said county having had an opportunity to receive said body or bodies.

14. *And be it enacted*, That any person having duties enjoined upon him by the provisions of this act who shall neglect, refuse or omit to perform the same as hereinbefore required, shall, on conviction thereof, be liable to fine of not less than ten dollars nor more than one hundred dollars for each offense.

15. *And be it enacted*, That all acts and parts of acts inconsistent with this act be and the same are hereby repealed.

16. *And be it enacted*, That this act shall take effect immediately.

THE PUBLIC SERVICES.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from April 20, 1895, to April 26, 1895.

Col. JOSEPH R. SMITH, Asst. Surgeon-General, retirement from active service, April 18, 1895, is announced. By direction of the President.

Capt. WILLIAM P. KENDALL, Asst. Surgeon, is granted leave of absence for six months, with permission to go beyond sea, to take effect upon his relief from duty at Ft. Columbus, New York Harbor.

PROMOTIONS.

Lieut.-Col. DALLAS BACHE, Deputy Surgeon-General, to be Asst. Surgeon-General with the rank of Colonel, April 18, 1895.

Major DAVID L. HUNTINGTON, Surgeon, to be Deputy Surgeon-General with the rank of Lieut.-Col., April 18, 1895.

Capt. WILLIAM C. SHANNON, Asst. Surgeon, to be Surgeon with the rank of Major, April 18, 1895.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending April 27, 1895.

Asst. Surgeon M. W. BARNUM, ordered to examination for promotion, May 15, 1895.

Asst. Surgeon J. E. PAGE, ordered to examination for promotion, May 15, 1895.

Asst. Surgeon F. G. BRATHWAITE, ordered to the Naval Hospital, Norfolk, Va.

Medical Inspector T. C. WALTON, ordered as delegate to AMERICAN MEDICAL ASSOCIATION, Baltimore, Md.

Surgeon S. H. DICKSON, ordered as delegate to AMERICAN MEDICAL ASSOCIATION, Baltimore, Md.

LETTERS RECEIVED.

Allen, A. B., Brimfield, Ill.; Ashmead, A. S., New York; Alden, C. H., U. S. A.

Bulkley, L. Duncan, New York, N. Y.

Canfield, Wm. B., Baltimore; Colvin, D., Clyde, New York; Cerna, David, Galveston, Texas.

Denison, C., Denver, Colo.

Fox, Chas. J., Williamantic, Conn.; Farrington, John M., Binghamton, N. Y.; Forbes, S. F., Toledo, Ohio; Fyke, E. E., Centralia, Ill.

Garcelon, A., Lewiston, Me.; Gallup, Benj. E., Chicago, Ill.

Ingraham, C. W., Binghamton, N. Y.

Jeckins, Wm., Cincinnati, Ohio; Jelks, J. T., Hot Springs, Ark.; Johnson, G. W., Savannah, Ill.; Jordan, Edwin, Chicago, Ill.; Jones, W. S., Camden, N. J.; Jordan, J. R., Montgomery, Ala.

Krotoszyner, M., San Francisco, Cal.

Lanphear, Emory, St. Louis, Mo.; Loeb, H. W., St. Louis, Mo.

Matthias, Finch S., Chicago, Ill.; McDill, J. A., (3) Milwaukee, Wis.; Mann, E. C., New York, N. Y.; Madden, J. R., Milwaukee, Wis.; Maclean, Donald, Detroit, Mich.; Meisenbach, A. H., St. Louis, Mo.; Mann, E. C., New York, N. Y.

Osler, William, Baltimore, Md.

Paquin, Paul, St. Louis, Mo.; Pendley, J. W., Sharpe, Ky.; Porter, Jos. D., Key West, Fla.; Parsons, E. C., Hartford, S. D.

Reynolds, D. S., (2) Louisville, Ky.; Rohé, G. H., Baltimore, Md.; Ranniger, G., Naperville, Ill.; Rio Chemical Co., St. Louis, Mo.

Seibert, W. H., Steelton, Pa.; Smith, Wm. F., Baltimore, Md.; Small, E. H., Pittsburg, Pa.; Stedman, James, Danforth, Ill.; Sellman, W. A. B., Baltimore, Md.

Thorp, C. Y., New York, N. Y.; Thomas, C. P., Everett, Wash.

Wingate, U. O. B., Milwaukee, Wis.; Würdemann, H. V., Milwaukee, Wis.; Wood, C. A., Chicago, Ill.; Woodbridge, John E., Youngstown, Ohio.